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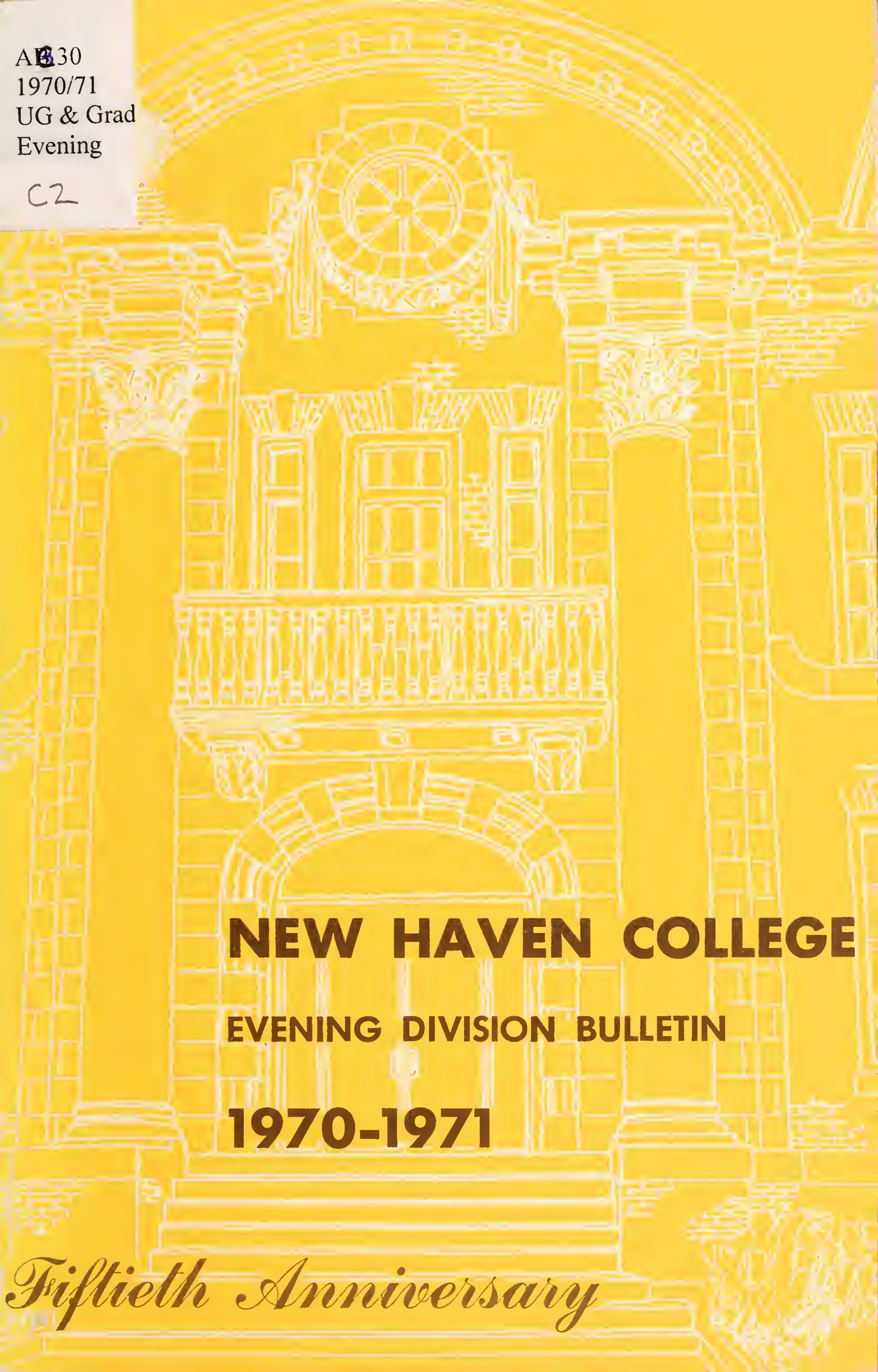

NEW HAVEN COLLEGE

EVENING DIVISION BULLETIN

1970-1971

Fiftieth Anniversary

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Evening Division Credit Programs

NEW HAVEN COLLEGE

1970-1971

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Evening Credit Division Calendar

SUMMER SESSION 1970

Registration period	Tuesday-Wednesday	June 2-3
Tuition due on or before	Wednesday	June 3
Classes begin	Monday	June 15
Holiday (Independence Day)	Friday	July 3
First Term final examinations	Monday	July 20
Second Term classes begin	Wednesday	July 22
Second Term final examinations	Wednesday	August 26

FALL SEMESTER 1970

Registration for current and former students	Monday-Friday	August 17-28
Registration for new students	Tuesday-Wednesday	September 1-2
Tuition due on or before	Wednesday	September 2
Labor Day	Monday	September 7
Classes begin	Tuesday	September 8
Thanksgiving Holidays	Wednesday-Friday	November 25-27
Last Day of classes	Wednesday	December 16
Final examinations	Thursday-Wednesday	December17-23

SPRING SEMESTER 1971

Registration for current and former students	Monday-Friday	January 4-15
Registration for new students	Tuesday-Wednesday	January 19-20
Tuitition due on or before	Wednesday	January 20
Classes begin	Monday	January 25
Spring Vacation	Saturday-Sunday	April 3-11
Classes Resume	Monday	April 12
Last Day of classes	Friday	May 7
Final examinations	Monday-Friday	May 10-14
Commencement	Sunday	June 6

SUMMER SESSION 1971

Registration period	Tuesday-Wednesday	June 1-2
Tuition due on or before	Wednesday	June 2
Classes begin	Monday	June 14
Holiday (Independence Day)	Monday	July 5
First Term final examinations	Monday	July 19
Second Term classes begin	Wednesday	July 21
Second Term final examinations	Wednesday	August 25

*Placement examinations are given at regular intervals. A schedule is available.

CONTENTS

ACADEMIC CALENDAR 2
BOARD OF GOVERNORS, ADMINISTRATION 4
GENERAL INFORMATION 5
EVENING AND EXTENSION CREDIT DIVISION 8
  Application 11
  Student Personnel Services 11
  Library 12
  Scholastic Regulations 13
  Requirements for the Degrees 14
  Honors 14
  Registration 15
  Summer Sessions 16
  Tuition and Fees 16
ARTS AND SCIENCES, SCHOOL OF 20
  Bachelor Degree Program, with majors in
    Biology 21
    Economics 21
    English 22
    History 22
    Chemistry 22
    Political Science 22
    Psychology 23
    Sociology and Social Services 23
  Associate Degree Program, with major in
    General Studies 25
BUSINESS ADMINISTRATION, SCHOOL OF 26
  Associate Degree Programs in
    Business Administration 29
    Law Enforcement 32
  Bachelor Degree Program, with majors in
    Accounting 29
    Economics 29
    General Management 29
    Operations Management 29
    Marketing 30
    Public Administration and Law Enforcement, with programs in
      Public Administration 30
      Law Enforcement—Administration 30
      Law Enforcement—Science 30
ENGINEERING, SCHOOL OF 33
  Associate Degree Program, with majors in
    General Engineering 34
    Electrical Engineering 34
    Industrial Engineering 35
    Mechanical Engineering 35
    Metallurgical Engineering 35
  Bachelor Degree Programs in
    Civil Engineering 36
    Electrical Engineering 37
    Industrial Engineering 37
    Mechanical Engineering 38
EXTENSION CREDIT PROGRAMS 38
  Bachelor Degree Programs in
    Industrial Engineering 38
    Mechanical Engineering 38
GRADUATE STUDIES, SCHOOL OF 39
  Master of Business Administration Program 40
  Master of Science in Industrial Engineering Program 41
COURSE DESCRIPTIONS 43
FACULTY 91

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Richard M. Lipp, B.S.	*Director of Continuing Education*

New Haven College

History

New Haven College is a private, coeducational, independent, urban college founded by the Y.M.C.A. of New Haven in 1920 as a branch of Northeastern University. The College has held for its primary function service to the individual student as well as to business, industry, and institutions of the New Haven area. It has a strong sense of responsibility to the community.

By act of the Connecticut General Assembly, the College was incorporated in 1926 and was authorized to grant the Associate in Science degree. At the same time, an agreement was negotiated with Yale University for the use of classrooms and laboratories for the operation of an evening division. During the years which followed, the College, in cooperation with local business and industry, developed and conducted a systematic educational program.

From 1941 to 1945, the College administered the official Yale University Engineering, Science, Management, War Training Program for New Haven County. Accreditation of its Associate in Science degree programs in 1948 by the New England Association of Colleges and Secondary Schools marked another significant step forward. The next decade saw the inauguration of the Reading Center, the Division of Special Studies, and the School of Executive Development, now the Management Center. During this period also two daytime programs for recent high school graduates were begun. These were in Industrial Administration and Engineering.

Since 1958 New Haven College has been authorized by the Connecticut General Assembly to offer courses of study leading to the Bachelor of Science degree to both day and evening students. The acquisition of the present campus in 1960 provided an opportunity for the College to expand its offerings for full-time students and to develop further its other credit and non-credit curricula. In March, 1962, the College acquired an additional 28 acres of undeveloped land three blocks north of the present campus, which is the site of new athletic facilities, including playing fields and a physical education building which will be finished by 1971.

In December, 1966, the College received accreditation of its bachelor degree programs by the New England Association of Colleges and Secondary Schools. The attainment of full accreditation, a major step forward, has further helped the College to pursue its principal objectives: to provide leaders and professional personnel within the framework of our democracy, to produce well-educated citizens with an understanding of important cultural and scientific progress, and to encourage students to reach the maximum of their potential.

The year 1969 marked a new educational achievement for the College when it introduced its School of Graduate Studies with programs in Business Administration and Engineering.

Divisions of the College

New Haven College has four administrative divisions: The Day Credit Division, the Division of Continuing Education, the School of Graduate Studies, and the Management Center. Included in the Division of Continuing Education are the Evening Credit Program, the Extension Credit Programs, the Summer School, the Division of Special Studies, and the Reading Center. All divisions of the College are co-educational.

Credit Programs

Day The degree-granting Day Division offers curricula which lead to the four-year Bachelor degree and the two-year Associate degree.

Students pursuing a course of studies leading to a Bachelor of Science degree in Business Administration may elect a major in Accounting, Economics, General Management, Operations Management (including Computer Concentration), Marketing, or Public Administration and Law Enforcement.

Students pursuing a course of studies leading to a Bachelor of Science degree in Engineering may elect a program in Civil, Electrical, Industrial or Mechanical Engineering.

Students pursuing a course of studies leading to a Bachelor of Arts degree may elect a major in Biology, Chemistry, Economics, English, History, Mathematics, Physics, Political Science or Sociology and Social Services. By taking a modified program in either Chemistry or Physics the student may receive a Bachelor of Science degree. A student may also elect to pursue an interdisciplinary course of study leading to a Bachelor of Arts degree in American Studies.

An Associate in Science degree may be obtained in Business Administration, Engineering, Law Enforcement or Arts and Sciences.

Students pursuing a course of studies leading to an Associate in Science degree in Arts and Sciences may elect a major in General Studies, Commercial and Advertising Art or Journalism.

Evening The degree-granting Evening Division offers curricula which lead to a Bachelor of Science, a Bachelor of Arts, and an Associate in Science degree.

A Bachelor of Science degree is offered in the following areas: Business Administration with majors in Accounting, Economics, General Management, Operations Management (including Computer Concentration), Marketing, Public Administration and Law Enforcement; Civil Engineering; Electrical Engineering; Industrial Engineering; and Mechanical Engineering. Law Enforcement-Administration and Law Enforcement-Science are programs in the Public Administration and Law Enforcement major.

A Bachelor of Arts degree may be obtained in the following majors: Biology, Chemistry, Economics, English, History, Political Science, Psychology, and Sociology and Social Services.

An Associate in Science degree is offered in the following areas: General Studies; General Management; Engineering with a major in General, Electrical, Industrial, Mechanical or Metallurgical Engineering; and Law Enforcement.

Extension Programs

A particular function of an urban college is to organize and develop programs of study which will serve the more specific needs of area industries and organizations. New Haven College has undertaken these programs as the need was recognized. Such programs take the form of off-campus extension classes being held in various locations throughout Connecticut. Current program offerings include:

Law Enforcement Programs The dramatic changes in the nature and scope of the problems confronting society in various areas of law enforcement require equally important adjustments in the approach to solving them. Highly educated people in all the fields of law enforcement have become a necessity.

The basic program leading to the Associate in Science degree prepares students to be proficient and competent in the many aspects of police work. It offers professional and cultural courses at the college level for careers in private or public law enforcement.

The Bachelor of Science degree programs, in either Administration or Science, require the associate degree program as a base. They supply the specialized courses for careers in their respective areas as well as the regular liberal arts studies.

Groton Extension Division This program leads to a Bachelor of Science degree in Business Administration, Mechanical Engineering or Industrial Engineering. The majority of courses are taught in the Groton area, but it is recognized that certain courses must be taught on campus at New Haven College. Matriculation into this program presumes the equivalent of the first two years of a comparable program.

The Division of Special Studies

This Division offers a series of professional certificate courses in engineering, business, and general areas. They are usually designed to provide supplemental knowledge and skills needed in specialized jobs in business and industry, and do not carry academic credit. Further information may be obtained by requesting separate schedules and course folders from the Director of the Division of Special Studies.

The Management Center

The purpose of the Management Center is to provide educational opportunities for those managers and administrators in industry, business, and service organizations whose needs are not met in more conventional undergraduate or graduate programs. The overall objective of the Center is to offer programs to help managers of maturity and experience meet the broader and more complex requirements of positions of greater responsibility in their organizations.

Broadly speaking, the programs of the Center are designed to meet the needs of two different levels of management, 1) that of staff and line executives at upper levels, and 2) middle management administrators. At the upper executive level the programs consist of seminars and workshops of varying lengths as needed. At the middle management level the standard format is a part-time on-campus program. Also planned are in-plant programs in which the curriculum will be specifically designed to meet individual company or industry needs. In addition there are special programs available on an ad hoc basis, either on or off campus, as required.

The Reading Center

The New Haven College Reading Center offers a varied program of reading techniques and study skills to fit the specific needs of adults and high school and college students. In-plant management training programs can be arranged. Additional information may be obtained from the Director of the Reading Center.

Accreditations and Memberships

New Haven College is a coeducational, non-sectarian, independent institution of higher learning chartered by the Legislature of the State of Connecticut and accredited by the Connecticut State Department of Education as a junior and senior College. The College holds membership in the New England Association of Colleges and Secondary Schools and the Connecticut Conference of Independent Colleges, and is also a member of New England and national educational and professional organizations.

The New England Association of Colleges and Secondary Schools accredits schools and colleges in the six New England States. Membership in one of the six regional accrediting associations in the United States indicates that the school or college has been carefully evaluated and found to meet standards agreed upon by qualified educators.

The Division of Continuing Education also holds membership in the Connecticut Association of Continuing Education, the Association of University Evening Colleges and the National Association of College and University Summer Sessions.

Evening and Extension Credit Divisions

RICHARD M. LIPP, Director

Aims and Objectives

The College believes that work is good educational experience, but it is improved when related to academic instruction. This means that a student's work and scholastic program should be integrated as far as possible. By such integration the traditional barrier between the academic and the practical may be broken down.

In accordance with this viewpoint, the College encourages and assists its students to seek employment related to their degree programs or to pursue courses of study related to their work. The relationship between work and study necessarily varies, of course, but becomes increasingly important after the first year of study. The placement activity of the College is designed to implement the idea of an integrated program of work and study.

Schedule of Hours and Subject Load

All courses, except laboratory courses, offered in the Evening Credit Program are scheduled to meet from 7:00 to 9:45 P. M. The College is operated Monday through Friday.

A student may carry as few as three semester hours or as many as ten, depending on his wishes. The same academic standards are required of the student regardless of the number of credits he carries.

Admission

Since each program of the College has its own admission requirements, these requirements are defined in detail in subsequent pages of this catalog.

In general, graduates of accredited secondary schools are eligible for admission. However, in special cases persons who have not completed their high school education may be admitted to the various divisions of New Haven College by meeting certain specified conditions.

In the case of adults, the College is interested in evidence of maturity and motivation as well as in formal education as prerequisites for admission.

With the exception of "auditors," students wishing to take any course, whether or not they seek a degree, must satisfy the admission requirements.

New Haven College welcomes the applications of students from all geographic areas, from public or private schools, and from all races, economic levels and religions.

Classification of Students

There are three classifications of students in the Evening Credit Programs:

Degree Student The degree student indicates on his registration that he is undertaking to complete the requirements for the A.S. degree or B.S. degree in one of the Evening Credit Programs. He must satisfy all the admission requirements and be a fully matriculated student.

Non-Degree Student The non-degree student is one who does not intend to meet all the requirements for a degree, but who wishes to select certain subjects which are offered as a part of the degree requirements. Although not seeking a degree, the non-degree student must satisfy all admission requirements in the same way as the degree student, thus making it possible for him to become a degree candidate at any later registration simply by so indicating on his registration. Although the student is not a candidate for a degree, he must be fully matriculated.

Auditor The classification of auditor is assigned to persons who wish merely to attend class and listen to the discussion. Since they are not required to meet any of the admission requirements, they are not privileged to participate in discussion, nor to have tests and examinations graded by the instructor; they are not subject to attendance regulations, and are not granted credit.

Admission of Students from Secondary Schools

Requirements The following regulations apply to the admission of students from secondary schools.

The applicant should be a graduate of an approved secondary school or should possess a state high school diploma.* In some cases, an adult who has completed at least two years of secondary school with satisfactory record may be considered, provided he performs exceptionally well on the placement examinations which are required. The admission of such an adult will be tentative for one year, during which time he must pass the state examinations for the state high school diploma. No person will be considered who has not completed at least two years of secondary school. The quality of the secondary school record, especially of the academic subjects it contains, is given greater consideration than is the specific pattern of courses taken in secondary school.

Applicants from secondary schools are required to take admission tests, including Scholastic Aptitude, Mechanics of English, Reading Comprehension, and Mathematics. College Entrance Examination Board results, if satisfactory, are accepted in place of the New Haven College admission examinations.

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* Information regarding the examinations for the state high school diploma may be obtained from the Director of Admissions, or by writing to the Bureau of Youth Services, State Department of Education, State Office Building, Hartford, Connecticut 06103.

Admission of Students Transferring from Other Colleges

Requirements Transfer students who present evidence of completion of at least thirty semester hours of study at an accredited college with a grade of "C" or better may be admitted on the basis of an official transcript and will not be required to take the Scholastic Aptitude Examination.

For the purpose of determining placement, the following examinations are required as indicated below:

The Mechanics of English Examination and the Reading Comprehension Examination are required unless the transcript shows the completion of at least three semester hours of college English with a grade of "C" or better.

The Mathematics Examination is required, unless waived by the Mathematics Department, for those students whose programs require mathematics.

Placement in courses as a result of the above examinations will be on the same basis as for applicants from secondary schools.

Transfer students who do not have the required thirty semester hours of work as noted above, or who have been dismissed for academic deficiency, are required to take the Scholastic Aptitude Examination in addition to the other placement examinations which are applicable, as described above. Students who have been dismissed for academic deficiency will be considered only after the lapse of one semester.

Transfer students who are not certain of the quality of their previous work are advised to take all entrance examinations lest their transcripts be delayed or be of an unacceptable quality.

Advanced Standing Transfer credit from other colleges will be officially granted upon the successful completion of 12 semester hours at New Haven College.

Transfer students who wish to fulfill the requirements for any degree (Associate or Bachelor) at New Haven College must complete the last thirty semester hours of the program at this College. Also, for Associate degrees twelve semester hours must be in the field of specialization, and for Bachelor degrees eighteen semester hours must be in the field of specialization.

Crediting Examinations

A student who has independent knowledge of the content of an undergraduate course offered by the College may, with the approval of the respective department chairman and dean, take a special crediting examination in lieu of taking the course.

No student may take crediting examinations during the first or last semesters in which he is enrolled. To graduate he must earn at least 30 semester hours through regular course work.

Application Procedures

Those interested in seeking admission should call or write the College and arrange for a personal interview with a staff member. At the time of the interview the applicant will complete a Personal Data Form and will plan his program. Interviews may be scheduled during college office hours at the convenience of the applicant.

When the student decides to seek admission, he pays the application fee and arranges for the procurement of necessary transcripts.

Following application, the College requests the secondary school record of the applicant. Applicants who wish to present college transcripts, either for admission purposes or for advanced standing, must themselves request their college transcripts be sent to the College. The College provides a form for this purpose.

The applicant next takes such placement examinations as are required of him and is notified in writing of his acceptance or rejection, and of the subjects he will be required to take as a result of his performance on the placement examinations.

During the registration period he fills out the registration forms, indicating the courses he wants, and pays the tuition charges.

Transferability of Credit

In accordance with the usual practice among institutions of higher learning, transfer of credit from this College to another institution will be determined by the other institution in terms of the achievement and promise of the individual seeking transfer. The institution to which transfer is being made will also evaluate specific courses in terms of their length and content in relation to its specific requirements. New Haven College is an accredited institution and its credits will be given consideration by the major institutions of the country in terms of the conditions outlined above

Student Personnel Services

Counseling and Guidance The College maintains counseling and guidance officers on its staff. Staff and faculty also reserve many hours for counseling with students. Appointments for this purpose should be made at the Evening Reception Office.

Placement Service An evening placement service office is maintained by the College. Although the College does not conceive its function to be that of a public employment service, it is interested in and prepared to render placement service within the limitations of its purpose and resources.

A student or former student of the College who desires placement should call at the office for a placement application form and at that time will receive specific information as to whom he is to contact in regard to his placement problem.

A company wishing to use the placement facilities of the College should list the position and the desired qualifications in the form of a letter. A member of the College staff will then contact the company to discuss procedure and possibilities of filling the position.

Financial Aid and Scholarships Various types of financial aid are available at the College. A limited number of partial tuition grants in aid are available during the Fall and Spring semesters. Grants are also available to full-time employees of a publicly funded law enforcement agency under the Law Enforcement Student Grant Program. Payments up to $300 per semester are provided to part time students working towards a degree in this field. Criteria are need and scholastic standing. Various organizations make available each year a limited number of academic scholarships. For further information contact the Evening Director or the Director of Financial Aid.

The Evening Student Council

Membership in the Evening Student Council is open to all evening credit students who have successfully completed one full semester. Nominations and elections by secret ballot are conducted in the spring of each year. Council meetings open to all evening credit students are held monthly.

The Council has three primary objectives:

To unite the evening students to promote the welfare of the evening student body of the College.

To give counsel and encouragement to all evening students of the College and to develop a school spirit among them.

To convey evening student opinion to the administration and to work with the officers of the College to accomplish student objectives.

Fraternities In 1967, the Law Enforcement students formed a joint day and evening fraternity. Membership is open to all students pursuing a degree in Law Enforcement. Students who are interested in joining the Law Enforcement Students' Fraternity should contact the Chairman of Law Enforcement.

Student Publications include: The News, the all-college newspaper edited and published by the student group; The Chariot, the annual yearbook; and the Student Handbook. Any student may volunteer his services on any of the student publications.

Library

The Library contains more than 50,000 catalogued volumes in an open-shelf arrangement, with facilities for study and browsing. Subscriptions to approximately 650 periodicals and extensive back-issue files are maintained. There are also a pamphlet file and a growing microfilm collection. While strongest in the specific areas of study in the college curricula, the Library's resource materials cover all fields.

The resources of the Free Public Library of New Haven (380,000 volumes) and of the West Haven Public Library (79,000 volumes) are available to all students of the College. For those who are not residents of the respective communities, there is a nominal borrower's charge, although anyone may use without charge materials within the buildings of these libraries.

Alumni Association

Membership in the Alumni Association is acquired immediately upon graduation from either the associate or the bachelor program. A member of the administrative staff of the College serves as Director of Alumni Relations. An Executive Committee conducts the affairs of the Association during the periods between annual meetings and also serves as a planning group. There is a standing committee on annual giving.

In addition to the annual meeting, other meetings of social and educational interest occur during the year, and a quarterly publication, the *Alumni News*, is mailed without charge to each alumnus.

The Alumni Association is represented on the Board of Governors by the election of a member to the Board for a term of two years. The president of the Association serves on the Board of Governors as an ex-officio member.

Scholastic Regulations

Grading System The following grading system is in use and, except where otherwise specified, applies both to examinations and to term work. The weight of a final examination grade is a matter individually determined by each instructor. A—Superior, B—Good, C—Fair, D—Lowest passing grade, F—Failure.

Inc.	Incomplete. Indicates that some work remains to be completed. Such work must be made up within six months in order to remove the "incomplete." Otherwise, the "Inc." remains on the student's record, no credit is given for the course and it must be repeated before further work for which it is prerequisite may be taken.
WD	Withdrawal. Indicates either: (1) withdrawal prior to midpoint of semester, or (2) withdrawal after midpoint of semester and work satisfactory at that time.
WF	Indicates withdrawal after midpoint of semester with unsatisfactory work.
S	Satisfactory. Given only in non-credit courses.
U	Unsatisfactory. Given only in non-credit courses.

Grade Reports Reports of the final grade in each subject will be mailed to the student soon after the close of each semester. The same report will be mailed to employers in those instances where the student has given his approval. Reports will be mailed to parents or guardians of all students under 21.

Academic Standards The academic standing of each student will be determined on the basis of his quality point ratio each semester.

During each year of enrollment in the College, a quality point ratio of 1.5 is required.

Failure to earn the required quality point ratio in any year will place a student on academic probation for the following semester of enrollment.

A student is automatically dismissed when he receives a third probation, or when his quality point ratio for any one semester is less than 1.00.

Attention is called to the fact that the minimum quality point ratio of 1.5 which is required to remain in good academic standing from year to year is insufficient to meet the graduation requirement of a total quality point ratio of 2.0. Therefore, the fact that a student may never have been on probation is no guarantee that he will meet graduation requirements.

In order to determine quality point ratios, each letter grade is assigned a quality point value: A—4 quality points, B—3 quality points, C—2 quality points, D—1 quality point, F—0 quality points.

The quality point ratio for all credit students is obtained by multiplying the quality point value of each grade by the number of semester hours of the course, then dividing the total quality points by the total semester hours.

Readmission Application for readmission after a student has been dismissed will be considered only after the lapse of a semester and only when the student provides evidence which indicates his probable success if readmitted.

Requests for readmission should be submitted in writing to the Director of Continuing Education at least three weeks before the opening of the semester and should include evidence supporting the student's belief that he will succeed if readmitted.

Readmission does not automatically follow; each application is decided individually by the Committee on Academic Standing.

Dean's List Evening students who have accumulated a minimum of 14 semester hours at the College will automatically be considered for the Dean's List at the end of each semester. A cumulative quality point ratio of 3.20 or better is required.

Withdrawal—Evening Division

From College Students are required to discuss their intentions with the Director of the Evening Division before withdrawing from the College.

From a Program Students considering a change in program should first discuss the matter with the Department Chairman of the proposed new program. If it is agreed that the change is advisable, written permission will be granted. Forms for making a change are provided at the Evening Reception Desk.

From a Course Forms are provided at the Evening Division Office.

Requirements for the Degrees

The Associate and Bachelor degrees will be conferred at Commencement when the student has met *all* the requirements of his program and:

1. has earned a cumulative quality point ratio of at least 2.0;
2. has been recommended by the faculty;
3. has met all financial obligations.

Associate Degree with Honors

A degree *with Honors* is awarded to students who have a quality point ratio of 3.25 for the semester hours specifically required for the degree program from which they are being graduated, and who have taken all the required work at this College.

Transfer students will be awarded honors on the same basis, provided however, that their total average will be considered only when they have an honor average for studies completed at this College.

A degree *With High Honors* is awarded to students who have a quality point ratio of 3.50 based on the same considerations as noted above.

In determining eligibility for degrees with honors, credits earned by crediting examinations and electives in excess of those required will not be considered.

Bachelor Degree with Honors

Honors may be conferred upon candidates for graduation who have completed at least 60 semester hours of work at New Haven College in their junior and senior years. The following standards shall be used:

1. The Bachelor degree *Cum Laude* may be awarded to a student whose cumulative quality point ratio is at least 3.25 at the end of the first semester of his senior year and who continues to attain the same standard for the remainder of the year.
2. The Bachelor degree *Magna Cum Laude* may be awarded to a student whose cumulative quality point ratio is at least 3.50 at the end of the first semester of his senior year, who continues to attain the same standard for the remainder of the year, whose quality point ratio in all courses counting toward his major is at least 3.50, and who has completed all the suggested courses within his curriculum.
3. The Bachelor degree *Summa Cum Laude* may be awarded to a student whose cumulative quality point ratio is at least 3.70 at the end of the first semester of his senior year, who continues to attain the same standard for the remainder of the year, whose quality point ratio in all courses counting toward his major is at least 3.70, and who has completed all the suggested courses within his curriculum.

Advanced Study

Advanced study courses are offered for qualified students in the departments offering the degree of Bachelor of Science or Bachelor of Arts. These courses may include a thesis, tutorial work, or independent study which permits the students to work intensively in areas of special interest.

Registration

Degree and Non-Degree Students There are two parts to registration, the completion of the registration forms and the payment of tuition. Both should be completed before the closing date of registration as stated in the calendar. There is a penalty fee for delaying either of these two processes beyond the closing date of registration.

Registration is possible within office hours during the registration dates stated in the calendar.

Registering for new students must be in person at the College office. Currently enrolled evening students may register by mail. Forms are mailed to the student prior to the announced registration dates.

A separate registration is required for each of the semesters and for the summer session.

Auditors follow the same procedure and pay the same fees as credit students.

Changes of Registration and Schedules

Students are urged to plan their programs carefully before completing the registration forms in order to avoid the need for requesting changes. Once the registration period has ended, the student is charged the Change of Registration Fee for each change which he makes. The fee is payable when the student completes the form requesting the change.

Attendance Regulations

Classes are operated on the policy that it is necessary for all students to attend all class meetings. If a class is missed, the benefits from participation in the class discussion and instruction are completely lost. No student, regardless of ability, can afford that loss.

A student is allowed only two absences per semester for a 3-or-4 semester hour course. If the student is absent more than twice, permission to continue in the course must be obtained from the instructor.

Revisions and Changes

The College reserves the right to change any provision or requirement designated herein, and to effect the withdrawal of any student whose conduct at any time is not satisfactory to the College.

The Summer Sessions

The College offers summer sessions in both the Day and Evening Divisions with these primary functions:

To provide an opportunity for study to students of the area who attend other schools during the regular academic year. For financial reasons, most of these students find it desirable to live at home and work while attending summer school.

To offer an opportunity to present and prospective students of New Haven College to attend summer classes.

The usual reasons for attending summer sessions include making up deficiencies, satisfying prerequisites for advanced courses, and acquiring advanced standing.

Students in either credit division at New Haven College may attend either day or evening sessions in the summer. Those looking forward to entering college may use summer classes to satisfy entrance requirements.

Some 134 institutions have authorized their students to take courses here and transfer their credits. Prior approval by the parent school is necessary to insure transfer credit. The College is a member of the New England Association of Colleges and Secondary Schools.

Registration For all new students a personal interview with a staff member of the College is necessary. Registration procedures will be explained at this time. For those new students who desire work for credit in other institutions, prior approval should be obtained from those institutions. This procedure should be followed each semester regardless of previous attendance.

Tuition and Fees

Evening Division: Regular Academic Year

Application fee—payable only once at the initial time of application. Not refundable	$10.00
Tuition—per credit hour or equivalent	33.00

This includes Student Activity Fee which covers subscription to College newspaper, use of Student Center, and helps to defray cost of all student activities and facilities.

Change of registration—assessed for changing courses or sections after the completion of registration 5.00

Summer Terms

For information regarding both Day and Evening summer sessions, request the Summer School Bulletin.

Other Charges

Late registration—assessed for failure to complete registration and/or payment of fees prior to the opening night of classes. Not refundable. 5.00

Laboratory and Breakage fees—payable each semester by students registering for courses requiring the laboratory fee. See Course Description for specific amounts. Not refundable.

Make-up Examination—assessed when a student is permitted to take an end-of-semester examination at other than the scheduled time except for conflicts caused by the examination schedule 5.00

Make-up Test—assessed when a student is permitted to make up an announced test during the semester 3.00

Auditors—the fee for a student auditor in any course or courses is the same as if the courses were taken for credit.

Graduation fee—assessed regardless of participation in exercises and due before March 1st of year of graduation. Not refundable 25.00

Transcript of academic work—no charge for the first one; thereafter, per copy 1.00

Payment of Bills

Tuition, fees, and other college charges are payable at time of registration. Payment made by check or money order should be made payable to New Haven College.

A deferred payment plan is available to all full-time students and to all part-time students carrying 6 or more credit hours or the equivalent. Details of this plan are available at the Business Office.

Summer Terms: Because of the short duration of the summer terms, the total amount due for tuition and fees is due and payable at time of registration for each term.

Failure to Pay

The College withholds the giving of grades, the issuance of transcripts, and the granting of honorable dismissal to any student whose account is in arrears.

Refund of Tuition

Registration does not carry with it the right of a refund of tuition in cases of withdrawal. No deduction is made for temporary absence from classes, nor is any refund made if a student is suspended or dismissed.

Requests for withdrawal should be made in person through the Evening Office. If this is not possible, a letter requesting withdrawal must be sent to the Director, Evening Credit Division. Telephone requests cannot be honored.

A. Full-time students—No refunds are granted to any student who voluntarily withdraws from the College. In certain cases of involuntary withdrawal before the end of the fifth week of a semester, some refund up to 50% of tuition only may be made, the exact amount of which is determined by the College. These cases are limited to instances of involuntary withdrawal involving:

(1) the death or protracted serious illness of a student; or

(2) involuntary induction into military service.

All requests in cases of the above must be in writing and must be documented. The date of the request for withdrawal will serve as the basis for computing any refund. There is no refund after the fifth week of a semester.

B. Part-time students—Tuition only is refunded or canceled by one of two methods upon receipt of formal withdrawal request before the end of the fourth week of a semester.

1. Percentage basis for any reason during the first four weeks of a semester:

   80% of semester tuition—1st week
   60% of semester tuition—2nd week
   40% of semester tuition—3rd week
   20% of semester tuition—4th week
   0% of semester tuition after 4th week

2. Pro-rata basis of tuition before end of fourth week involving:
   (a) death or protracted serious illness of a student
   (b) involuntary induction into military service
   (c) transfer or change in work initiated by employer that precludes meeting class schedules.

All requests for refunds must be made in writing and include necessary documentation.

C. Summer session students—In cases of withdrawal from a course or courses within the first week of each term, a refund of 50% of tuition only is made. There is no refund of summer tuition after the first week.

The foregoing policy is intended to protect the College, since the College plans its expenses and bases its budget upon full collection of tuition and fees from all registered students, and assumes the obligation of supplying instruction and other services throughout the year.

Graduate School

The tuition charge is $50 per credit hour. A non-refundable application fee of $10 is required. The registration fee for each semester is $5.

Tuition for graduate courses is due at registration. However, College policy permits a graduate student to pay one-half of the total tuition at registration and the balance within 45 days.

Students are responsible for the payment of tuition to the College. Some companies will reimburse employees for tuition. It is the responsibility of students to arrange with their employer for reimbursement.

The refund policy for graduate students who withdraw from any course or from the programs is as follows: 100% refund of tuition upon formal withdrawal in the first week, 75% refund of tuition upon formal withdrawal in the second week, 50% refund of tuition upon formal withdrawal in the third week, and 25% refund of tuition upon formal withdrawal in the fourth week.

No refund will be made after the fourth week of classes.

For a student to be eligible for a refund, he must formally notify the Graduate Office of his intention to withdraw and complete the withdrawal form.

Changes in Arrangements

Because of the difficulty of determining long-range economic trends, the College reserves the right to make such changes in its tuition, fees, and other costs and in regulations, facilities, and class offerings which, in its judgment, are considered necessary and just, and to apply such changes to students already in attendance as well as to new students. No change in charges, however, is made retroactive.

STUDENT CENTER

School of Arts and Sciences

John Collinson, Dean

Offering the Degree Bachelor of Arts with Majors in:

- Biology
- Economics
- English
- History
- Chemistry
- Political Science
- Psychology
- Sociology and Social Services

Offering the Degree Associate in Science in Arts and Sciences with Major in:

- General Studies

Arts & Sciences

Bachelor of Arts

The School of Arts & Sciences offers a four-year college curriculum leading to Bachelor of Arts and Bachelor of Science degrees. Students may earn a Bachelor of Arts degree in any of the following fields: Economics, English, History, or Chemistry.

Because some employers and some graduate schools in scientific and technical fields indicate a preference for the Bachelor of Science degree, this degree is offered in Chemistry. If the student wishes to obtain a Bachelor of Science in this major, he may do so by taking a heavier concentration in the sciences. The details of this program are to be obtained from the department chairmen.

Matriculation for Bachelor Degree Students who have completed at least two semesters or equivalent (30 academic credit hours) with a minimum quality point average of 2.00 may apply for matriculation for the Bachelor Degree.

Admission will be limited to applicants who have given evidence of capacity and motivation adequate for upper division work as determined by the department chairman.

Requirements for the Degree

A cumulative quality point ratio of at least 2.00 is required in a Bachelor of Arts student's major field.

Biology The program prepares the student for medical, dental, veterinary or other professional training, as well as for a graduate program in biology. Students in other disciplines, allied or not related, frequently choose biology as a minor area of concentration. This is particularly true for those majoring in the social and behavioral sciences.

Potential biology majors should consult with the department chairman during their first term.

Biology majors are required to take SC 251-252, CH 105-106, M 115-116 or M 117-118, SC 201, SC 301, PH 103-104, SC 261-262, SC 308, SC 307 or SC 309, SC 491-492, and five elective courses. The language choice in order of preference is German, French, Russian, Italian or Spanish.

Economics An economics major within the broad program of liberal studies provides a preparation for higher positions in business and industry today. It is also excellent preparation for graduate work in business administration or for graduate study in economics itself.

Economics majors will be required to take, in addition to EC 133-134 (Principles of Economics I and II), a total of 30 semester hours, including EC 336 (Money and Banking), EC 320 (Mathematical Methods in Economics), EC 340 (Intermediate Economic Analysis), EC 445 (National Income Analysis and Business Cycles), EC 450 (Thesis). Beyond these requirements, a flexible program may be devised for each major to fit the student's needs and interests. With the approval of the chairman or some other member of the department, a student may elect suitable courses in other departments to fulfill the semester hour requirement. Where the Liberal Arts core curriculum calls for 12 semester hours of mathematics and/or science, economics majors are urged to take M 115 and M 116.

English The study of English as one of the humanistic disciplines offers a solid foundation for graduate work and a liberal education, developing abilities to think critically and write effectively.

The course requirement for English majors is E 113, 206, 211-212, 213-214, and 21 additional semester hours in course work beyond the sophomore level. While no specific courses are required, students will balance their work between period courses and other offerings of the English department. Their major programs must be approved by an advisor who is a member of the English department.

Prerequisites for courses numbered above 300 should include E 113, E 206 and E 211-212. Students not majoring in English who wish to take courses numbered above 300 should have permission of advisors.

History The study of history provides excellent preparation for those seeking professional careers in public service and general administration. This major also builds a good foundation for graduate study in various areas, such as law and teaching.

History majors, in addition to a full year of Western Civilization and American Civilization and with the approval of the chairman or some other member of the department, must take 24 additional semester hours. A flexible program may be devised for each major to fit his needs and interests. Suitable courses in other departments may be chosen to fulfill the semester hour requirement. Students may wish to elect most of their courses in history within a particular field of concentration, but a minimum of at least three courses must be chosen outside that field, at least one being either HS 317 (Renaissance and Reformation) or HS 321 (History of Ancient Greece and Rome). HS 416 (Senior Seminar) is required of all majors.

Chemistry This major is offered for those students who wish to avail themselves of the many career opportunities in the general field of chemistry and also for those who wish to go on to graduate work with a broad liberal education and a thorough grounding in a scientific discipline.

A major in Chemistry must complete the following courses: twelve semester hours of German or Russian or the equivalent, PH 108, 209-10; CH 105-06, 211, 301-02, 341, 401, 431-32, 451-52 and/or an elective; and six semester hours of 400 level chemistry electives. In addition, he is required to take Mathematics through M 203. Students whose primary interest is in biochemistry or in pre-medical or pre-dental programs should elect SC 121-22, 131-32.

Political Science A political science major provides a foundation for the study of law, public administration at an advanced level, graduate work in political science with a view to teaching or government service, and work in the international relations area.

Political science majors will be required to take, in addition to PS 121-122 (American Government and State and Local Government), a total of 27 semester hours, including PS 401-402 (Political Theory, Ancient and Medieval and Political Theory, Modern and Contemporary) and PS 416

(Senior Seminar and Thesis). Beyond these requirements, a flexible program may be devised to fit the student's needs and interests. With the approval of the Chairman or some other member of the department, a student may select suitable courses in other departments to fulfill the 27 semester hour requirement.

Psychology Graduate study leading to the Master's degree is minimal for professional status in Psychology. A solid foundation for such graduate work is defined by a broadly-based liberal education.

Major requirements, under advisement, are P 111, P 301, P 305, P 321, P 341, P 342, P 350, and twelve hours of advanced Psychology courses. SC 121-122, M 115, SS 113, and PHL 111 should be completed by the end of the sophomore year.

Sociology and Social Services

Sociology Students who wish to understand the intellectual tradition that has focused on the description and explanation of human society will be interested in a sociology major. It requires a humanistic orientation while regarding empirical research as the major means of extending knowledge about man. Sociology is becoming increasingly significant in contemporary society. A sociology major may continue his work in graduate school or may find employment in such fields as government service, personnel work, advertising, and industry.

Major requirements, under advisement, are P 111, P 336, P 321, M 127, BA 216, and SS 113-114, SS 301-302, SS 400, SS 410 or SS 501, SS 430, and SS 515.

Social Services Students who wish to go directly into Social Work and related areas may take a concentration in Social Services rather than in Sociology. Courses in this area where they differ from the Sociology major are concerned with community problems and their relation to social agencies. Field work and research experience are a part of the curriculum. Employment opportunities in federal, state and private organizations are readily available or the student may wish to continue his education in a school of graduate studies.

Major requirements, under advisement, are P 111, 321, 336; SS 113-114, 301-302, 400, 430, 501 or 410, 515; M 227; and BA 216.

***Education—Secondary School Certification** The College offers Secondary School Teaching Certification in Accounting, Marketing, General Business, English, History, Social Studies, Physics, Mathematics, Chemistry, and General Science. Students wishing certification should meet with the Director of the Teacher Education program as early as possible in their college career.

There is a pressing need for secondary school teachers in Connecticut and in the rest of the United States. To receive certification, the student must complete departmental major requirements, at least eighteen hours of courses in Secondary Education, the core requirements, and electives to the total of semester hours required by the major. The student must have received a satisfactory grade in ED 341.

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* Offered subject to approval by the State of Connecticut Commission for Higher Education and the Connecticut Department of Education.

Core Requirements for Bachelor of Arts Program

The following course requirements must be fulfilled by all Bachelor of Arts Degree students.

Bachelor of Arts	
18-30 s.h.	ENGLISH AND HUMANITIES
3	English Composition
3	English Composition and Literature
6	Fine Arts
0-12	*Foreign Language
6	Literature
21 s.h.	SOCIAL STUDIES AND PHILOSOPHY
6	Economics
6	Western Civilization I & II
3	Philosophy
6	Psychology
	Sociology
	Political Science
12 s.h.	**SCIENCE AND MATHEMATICS
	Physics
	Chemistry
	Science
	Biology
	Mathematics
Total 60 s.h.	

* Competence in the language equivalent to the second semester of the intermediate level.

** Students are urged to elect a laboratory science. If a student elects the first semester of a double number course in science, he must elect the second semester of that course.

Bachelor of Arts Programs

FIRST YEAR

	Fall			*Spring*	
E 113	English Composition	3	E 206	English Comp. & Lit.	3
HS 111	Western Civilization I	3	HS 112	Western Civilization II	3
	Foreign Language	3		Foreign Language	3

SECOND YEAR

	Mathematics or Science	3		Mathematics or Science	3
	*Electives	6		*Electives	6

* Choices should be determined by the requirements of the student's major.

Biology SC 251-252, CH 105-106, M 115-116 or M 117-118. Omit HS 111-112 in freshman year.

Economics and History PS 121, SS 113, P 111

Chemistry M 117-18, CH 105-06, German or Russian

TOTAL hours required for the Bachelor of Arts Degree—120-126 hours, depending on major selected.

Bachelor of Science Program in Chemistry

Details of this program can be obtained before registration from the department chairman.

Course Outlines

A layout of the following programs may be obtained from the Office of Continuing Education: Biology, Economics, English, History, Chemistry, Political Science, Psychology, Sociology and Social Services.

Associate in Science Program

GENERAL STUDIES

It is recognized that there are students who desire a general education. They include those who wish a college degree in the field of general studies but do not desire a bachelor degree. Also, there are those who have not selected their field of specialization but desire to start with education of a general nature. The general studies program provides an Associate degree which may be the basis for later transfer into a Bachelor degree program.

The total hours required are distributed as follows:

FIRST YEAR

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
E 113	English Composition	3	E 206	Eng. Comp. & Literature	3
E114	Speech	3	P 111	Psychology	3
HS 111	Western Civ. I	3	HS 112	Western Civ. II	3

SECOND YEAR

E 201	World Literature I	3	E 202	World Literature II	3
SS 113	Sociology	3		Science *or* Math	3
	Science *or* Math	3		Elective	3

THIRD YEAR

E 211	Survey of Eng. Lit. I *or*		E 212	Survey of Eng. Lit. II *or*	
E 213	Survey of Am. Lit. I	3	E 214	Survey of Am. Lit. II	3
EC 133	Prin. of Economics I	3	EC 134	Prin. of Economics II	3
	Elective *or*			Elective *or*	
	Foreign Language	3		Foreign Language	3

FOURTH YEAR

PHL 111	Probs. of Philosophy *or*	
PHL 113	History of Philosophy	3
	Elective	3

Electives totaling 12 semester hours are to be selected from any credit offerings of the College for which the student satisfies prerequisites.

TOTAL hours required for Associate in Science Degree—60 Semester Hours.

School of Business Administration

Hugh N. Emerson, Dean

Offering the Degree Bachelor of Science in Business Administration with Majors in:

- Accounting
- Economics
- General Management
- Operations Management
  - Including Computer Concentration
- Marketing
- Public Administration and Law Enforcement, with programs in
  - Public Administration
  - Law Enforcement—Administration
  - Law Enforcement—Science

Offering the Degree Associate in Science in:

- Business Administration
- Law Enforcement

Business Administration

Bachelor of Science

The School of Business Administration offers preparation for managerial and administrative responsibilities through a program leading to the degree of Bachelor of Science in Business Administration. Students are familiarized with the basic concepts of business administration and given training in the use of the fundamental tools of management common to the private and the public sectors of the economy. The course of study combines a strong professional program in business areas with a comprehensive background in liberal arts.

The liberal arts program is essential to the student's development as an educated man conversant with the principal currents of thought and events of the world and especially of the western world and of his American heritage. In addition to furthering the development of a social conscience this program enables the student to view business against the broader background of society's affairs.

Admission Requirements

An applicant for admission to the Business Administration Programs should be a graduate of an approved secondary school. While no set program of high school subjects is prescribed, an applicant must meet the standards of the College in respect to the high school average and present 15 acceptable units of satisfactory work, including 9 or more units (4 in English) of college preparatory subjects. All students will receive placement examinations. Non-college-credit courses are available to remedy deficiencies.

Matriculation for Bachelor Degree Students who have completed at least two semesters or equivalent (30 academic credit hours) with a minimum quality point average of 2.00 may apply for matriculation for the Bachelor Degree.

Admission will be limited to applicants who have given evidence of capacity and motivation adequate for upper division work as determined by the Department Chairman.

A minimum cumulative quality point average of 2.00 must be attained for graduation in School of Business Administration required courses and departmental major required courses.

Programs in the Business Areas

The School of Business Administration considers it axiomatic that a graduate is better prepared for the business world when his collegiate business background has been comprehensive rather than highly specialized. Consequently, only a limited amount of specialization is intended in the various departmental majors. Approximately one half of the student's college work will be in the liberal arts and one half will be in business and economics. One half of the latter will be in the business core courses, one quarter will be in the departmental major and one quarter will be in business electives.

The Basic Program During the first seven semesters the business student will take the following designated courses in business and economics and in the liberal arts: Business: BA 101 Legal Concepts, IE 105 Technical Data Processing, BA 105 Marketing Principles , BA 125 Management & Organization, BA 128 Quantitative Techniques for Management, BA 216 Statistics, BA 113 Business Finance, A 111-112 Introductory Accounting, and Liberal Arts: E 113 English Composition, E 206 Composition and Literature, M 127 Finite Mathematics, EC 133 Economic Principles I, EC 134 Economic Principles II, PS 121 American Government, SS 113 Sociology, P 111 Psychology; PHL III Introductory Problems of Philosophy, SC 111-112 Physical Science.

The above program may be modified in the following respects: (1) a two semester course in biology, chemistry, or physics may be taken in place of SC 111-112 Physical Science, (2) subject to a placement examination by the Mathematics Department M 115 Mathematical Analysis I and M 116 Mathematical Analysis II (or other higher mathematics) may be substituted for the mathematics sequence and (3) the student who intends to major in accounting may take A 111-112 the freshman year and A 221-222 Intermediate Accounting during his second year and defer two courses.

The actual placement of the entering student by courses will be determined administratively subject to the restriction that E 113 English composition and E 206 Composition and Literature will be taken the freshman year and that the following sequence will be started by the qualified student immediately on entrance: M 127 Finite Math, BA 128 Quantitative Techniques for Management, and BA 216 Statistics.

A typical basic program is as follows:

	BUSINESS			LIBERAL ARTS		
	Required		*Sem. Hrs.*	*Required*		*Sem. Hrs.*
1st Sem.	BA 101	Legal Concept	3	E 113	English Comp.	3
				M 127	Finite Math.	3
2nd Sem.	IE 105	Tech. Data Process	3	E 206	Comp. & Literature	3
	BA 128	Quant. Techniques	3			
3rd Sem.	BA 105	Prin. of Mktg.	3	EC 133	Prin. of Econ. I	3
				SS 113	Sociology	3
4th Sem.	BA 125	Mgmt. & Org.	3	EC 134	Prin. of Econ. II	3
				P 111	Psychology	3
5th Sem.	A 111	Intro. Acctg. I	3	PS 121	American Gov.	3
				SC 111	Physical Science I	3
6th Sem.	A 112	Intro. Acctg. II	3	PHL 111	Intro. Prob. Phil.	3
				SC 112	Physical Science II	3
7th Sem.	BA 216	Statistics	3	E 201	World Literature I	3
	BA 113	Business Fin.	3			

Associate In Science Successful completion of the first seven semesters of the business program with a minimum quality point average of 2.00 qualifies the student for the Associate in Science in Business Administration Diploma.

The Business Majors Prior to the end of his seventh semester the student will select his business major and in consultation with his departmental advisor will lay out the program for his junior and senior years. This will involve the selection of business electives and liberal arts electives in addition to the required business and liberal arts courses. The term "business elective" means courses listed in Accounting, Business Administration, Economics, Industrial Engineering, Law Enforcement, Mathematics, and Public Administration.

In his final year each student will take BA 510 Managerial Economics and BA 512 Business Seminar.

In the liberal arts area during his years of specialization each student will take HS 111 Western Civilization I, HS 112 Western Civilization II, and E 201-202 World Literature I and II or other courses in literature and also six liberal arts electives.

The requirements of the various business departments beyond the business core courses and the elective courses provided by each department are indicated below.

Accounting and Finance — is selected by those who wish to follow this career including possibly ultimate attainment of the Certified Public Accountant license. Accounting has long been recognized as a useful route to managerial responsibilities in other fields of business.

The required courses are: Intermediate Accounting I and II, Advanced Accounting I and II, Cost Accounting I and II, Auditing I, Income Tax Procedure I.

The elective courses are Auditing II, Income Tax Procedures II, Investments, (Business Law II is a recommended business elective), Financial Management.

Economics — is a broad field in which specialists are called for by industry and government particularly to staff various types of research activities. This major is also one that would be considered by the student contemplating future graduate work or attendance at law school.

The required courses are: Money and Banking, Government Regulation of Business, Economics of Labor Relations, Intermediate Economic Analysis.

The elective courses comprise an extensive offering as listed under "Economics" in the course description section of the catalog.

General Management — is the field most generally chosen by those students who do not have a particularized objective.

The required courses are: Industrial Relations, Risk and Insurance, Advanced Statistics, Financial Management.

The elective courses are: Business Law II, International Business.

Operations Management — is a growing profession. Its practices are in increasing demand with the heightened use of quantitative analysis in the scientific management of business. The student with a specific interest in data processing usually selects this field.

The required courses are: Cost Control, Production Control, Operations Research, Systems Analysis.

The elective courses are: Business Games, Programming.

Marketing — is a widely recognized phase of business that presents unmatched opportunities to the qualified college graduate.

The required courses are: Advertising and Promotion, Marketing Management, Marketing Research, Sales Management.

The elective courses are: Retailing, Industrial Marketing, Physical Distribution Management.

Programs in Public Administration and Law Enforcement

Public Administration The Public Administration program is designed to prepare the student for careers in public affairs (government service, politics), governmental research, graduate school, or to give the student an insight, generally, into the various governmental organizations, functions, and methodology which are used to both determine and provide the services to the people.

On the premise that the basic skills required in managerial positions in public service have much in common with those of the manager in private industry the student follows the same program as other business students during the first three and half years. Refer to the preceding statement, page 28, captioned “The Basic Program.”

For his junior and senior years the student majoring in Public Administration will arrange his program under the guidance of his Departmental Chairman, so as to meet his defined objectives. A wide selection of courses is available in the School of Business Administration and the School of Arts and Sciences.

Law Enforcement Four year bachelor degree programs in law enforcement are offered. They are planned for high school graduates interested in any of the many careers in the administration and operation of criminal justice. These may be in state, local, or federal services or in private investigation or security forces. Two programs are offered, Law Enforcement-Administration and Law Enforcement-Science.

Law Enforcement-Administration The supervision of law enforcement is largely concerned with the activities and behavior of people in terms of maintaining law and order, providing needed services, and protecting life and property. The program provides the basic studies in the liberal arts and business administration with the required courses in the administration of law enforcement to prepare the individual for a management career in this field. See the table. Law Enforcement-Administration.

Law Enforcement-Science This program includes strong emphasis on chemistry, mathematics, and physics as well as the forensic laboratory techniques directly related to criminal investigation and identification. The basic liberal arts are included. See the table, Law Enforcement-Science.

LAW ENFORCEMENT—ADMINISTRATION

First Year

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Composition	3	E 206	Comp. & Literature	3
PA 103	Police Org. & Admin. I	3	PA 104	Police Org. & Admin. II	3
P 111	Psychology	3	SS 113	Sociology	3

Second Year

PA 106	Police Supervision	3	PA 201	Intro. to Forensic Science	3
SC 121	Biology I	3	PA 221	Juvenile Delinquency	3
SC 131	Biology Lab	1	SC 122	Biology II	3
PA 215	Prin. of Investigation	3	SC 132	Biology Lab	1

Third Year

PA 217	Amer. Legal System I	3	PA 218	American Legal System II	3
PS 121	American Gov.	3	PS 122	State & Local Gov.	3
	*Language Elective	3		*Language Elective	3

Fourth Year

	Elective (Restricted)	3	SA 211	Prin. of Public Admin.	3
	Elective (Restricted)	3	IE 105	Tech. Data Processing	3
P 336	Abnormal Psychology	3	PHL 124	Logic & Scientific Methods	3

Fifth Year

EC 133	Economics I	3	EC 314	Public Finance	3
PA 311	Criminology	3	A 113	Industrial Accounting	3
PS 302	U. S. Constitution	3		Elective	3

Sixth Year

PS 216	Municipal Government	3	PA 401	Police Problems Seminar	3
SS 400	Minority Group Relations	3	IE 507	Systems Analysis	3
	Elective	3		Elective	3

Seventh Year

SS 410	Urban Sociology	3	PA 402	Police-Community Rel.	3
	Elective	3		Elective	3

TOTAL—Required for the Bachelor of Science Degree: 122 semester hours.

Business — Table IV

LAW ENFORCEMENT—SCIENCE

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
FIRST YEAR					
E 113	English Composition	3	E 206	Comp. & Literature	3
PA 103	Police Org. & Admin. I	3	PA 104	Police Org. & Admin. II	3
PS 121	American Gov.	3	PS 122	State & Local Gov.	3
SECOND YEAR					
PA 106	Police Supervision	3	SS 113	Sociology	3
SC 121	Biology I	3	SC 122	Biology II	3
SC 131	Biology Lab	1	SC 132	Biology Lab	1
	Elective	3		Elective	3
THIRD YEAR					
PA 217	Amer. Legal System I	3	PA 218	Amer. Legal System II	3
M 115	Math. Analysis I	3	M 116	Math. Analysis II	3
CH 105	Gen. Chem. I w/lab	4	CH 106	Gen. Chem. II w/lab	4
FOURTH YEAR					
P 111	Psychology	3	PA 311	Criminology	3
PA 215	Prin. of Investigation	3	PA 201	Intro. Forensic Science	3
	Elective	3		Elective	3
FIFTH YEAR					
P 336	Abnormal Psychology	3	PHL 124	Logic & Scientific Method	3
PA 221	Juvenile Delinquency	3	PH 104	Gen. Physics II	3
PH 103	Gen. Physics I	3		Elective	3
SIXTH YEAR					
PA 303	Forensic Lab I	3	PA 304	Forensic Lab II	3
IE 105	Tech. Data Processing	3	IE 507	Systems Analysis	3
PS 302	U. S. Constitution	3	PA 401	Police Prob. Seminar	3
SEVENTH YEAR					
SS 410	Urban Sociology	3	PA 402	Police—Com. Relations	3
	Elective	3		Elective	3

TOTAL—Required for the Bachelor of Science Degree: 124 semester hours.

Associate Degree Program Successful completion of the first seven semesters of the Law Enforcement Program-Administration with a minimum quality point average of 2.00 qualifies the student for the Associate in Science in Law Enforcement.

School of Engineering

Thoms C. Warner, Jr., Dean

Offering the Degree Bachelor of Science in:

Civil Engineering
Electrical Engineering
Industrial Engineering
Mechanical Engineering

Offering the Degree Associate in Science in:

General Engineering
Electrical Engineering
Industrial Engineering
Mechanical Engineering
Metallurgical Engineering

Engineering

Associate in Science Programs

The purpose of this series of Engineering Programs is to meet the needs of students who wish to specialize in one of the fields of engineering offered by the College without undertaking a bachelor program. The first two years a student will take the necessary courses in Physics and Mathematics which are prerequisites for most engineering courses. The third and fourth years allow selection from the following engineering fields: General, Electrical, Industrial, Mechanical, or Metallurgical. A minimum of 60 semester hours is required for the Associate in Science Degree in Engineering.

COMMON CORE COURSES

First Year

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
E 113	English Composition	3	M 117	Calculus I	3
ME 101	Engineering Graphics	3	BA 125	Management & Organiz.	3
M 115	Math. Analysis I	3	IE 102	Intro. to Computers	3

Second Year

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
MT 123	Engineering Materials	3	M 118	Calculus II	3
PH 103	General Physics I	3	PH 104	General Physics II	3

Major in General Engineering

Third and Fourth Years

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
CH 103	Intro. to Gen. Chem. w/lab	3	ME 124	Mechanical Processes	3
ME 102	Engr. Drawing & Design	3	E 201	World Literature I	3
	Electives	9		Electives	9

Electives totaling 18 semester hours must be approved by the Dean of the Engineering School.

Major in Electrical Engineering

Third and Fourth Years

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
EE 223	Prin. of Elect. Engin. I	3	EE 224	Prin. of Elect. Engin. II	3
EE 331	Network Analysis I	3	EE 332	Network Analysis II	3
M 203	Calculus III	3	M 204	Differential Equations	3
				Electives, Restricted	12

Restrictive electives totaling 12 semester hours are to be selected from the following courses:

CH 105-06	Gen. Chem. w/lab	8	M 231	Linear Algebra	3
IE 330	Industrial Automation	3	EE 437	Ind. Power Systems Engr.	3
EE 336	Instrum. Electronics	3	EE 438	Elec. Power Transmission	3
EE 343-44	Electrical Machines	6	CE 201	Statics	3
EE 353	Electrical Machines Lab	2	ME 204	Dynamics	3
	Any 300 or 400 series Math. Courses	6			

Major in Industrial Engineering

THIRD AND FOURTH YEARS

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
EC 133	Prin. of Economics I	3	IE 204	Engineering Economics	3
IE 243	Work Analysis	3	ME 124	Mechanical Processes	3
	Electives, Restricted	9	BA 216	Statistics	3
				Elective, Restricted	3
				Elective, Free	3

Restricted electives totaling 12 semester hours are to be selected from the following courses:

BA 231	Industrial Relations	3	A 113	Industrial Accounting	3
E 220	Report Writing	3	IE 233	Cost Control	3
IE 119	Indust. Safety & Hygiene	3	IE 234	Production Control	3
IE 224	Programming	3	IE 223	Personnel Administration	3
MT 123	Engr. Materials	3	IE 344	Advanced Work Analysis	3
M 203	Calculus III	3	EE 223	Prin. of Elec. Engr.	3
			CE 201	Statics	3

Major in Mechanical Engineering

THIRD AND FOURTH YEARS

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
CE 201	Statics	3	ME 204	Dynamics	3
ME 124	Mechanical Processess	3	CE 202	Mechanics of Materials I	3
M 203	Calculus III	3	M 204	Diff. Equations	3
	Electives, Restricted	9		Elective, Free	3

Restricted electives totaling 9 semester hours are to be selected from the following courses:

EE 223	Prin. of Elec. Engr. I	3	EE 224	Prin. of Elec. Engr. II	3
CH 103	Intro. to Gen. Chem. w/lab	3	CH 105	General Chem. I w/lab	4
			ME 321	Fluid Dynamics	3
ME 301-02	Thermodynamics I & II	6	ME 315	M.E. Laboratory I	2
ME 311	Machine Elements	3	ME 312	Mechanical Design	3
ME 343	Mechanisms	3	MT 219	Physical Metallurgy I	3
CE 307	Mech. of Materials II	3	MT 220	Physical Metallurgy II	3
ME 415	M.E. Laboratory II	2			

Major in Metallurgical Engineering

THIRD AND FOURTH YEARS

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
CH 105	Gen. Chemistry I w/lab	4	CH 106	Gen. Chemistry II w/lab	4
MT 219	Physical Metallurgy I	3	ME 124	Mechanical Processes	3
	Elective, Free	3	MT 220	Physical Metallurgy II	3
	Electives, Restricted	6		Electives, Restricted	6

Restricted electives totaling 12 semester hours are to be selected from the following courses:

M 203	Calculus III	3	PH 210	Physics III	3
CE 201	Statics	3	PH 315	Nuclear Physics	3
ME 204	Dynamics	3	PH 323	Physics IV	3
CE 202	Mechanics of Materials I	3	MT 301	Welding Metallurgy	3
MT 324	Nuclear Metallurgy	3	MT 302	Polymeric Materials	3
MT 331	Non-ferrous Metallurgy	3	MT 304	Mechanical Behavior of Materials	3
MT 342	Steels & Their Heat Treatment	3			

Bachelor of Science Programs

The engineering programs combine the basic courses in chemistry, mathematics, physics, humanities, and social sciences with advanced studies in the various branches of engineering. All students are required to take the same core courses which comprise the first four years of the engineering program. An associate degree in engineering may be received upon completion of the core program.

COMMON CORE COURSES

First Year

	Fall	Sem. Hrs.		Spring	Sem. Hrs.
E 113	English Comp.	3	IE 102	Intro. to Computers	3
M 117	Calculus I	3	*HS 112	Western Civ. II	3
*HS 111	Western Civ. I	3	M 118	Calculus II	3

Second Year

E 201	World Literature I	3	E 202	World Literature II	3
EC 133	Prin. of Economics I	3	CH 105	Gen. Chemistry I w/lab	4
M 203	Calculus III	3	PH 108	Physics I	3

Third Year

PH 209	Physics II	3	PH 210	Physics III	3
M 204	Differential Equations	3	CE 202	Mechanics of Mat. I	3
CE 201	Statics	3	ME 204	Dynamics	3

Fourth Year

EE 223	Prin. of Elec. Engr. I	3	EE 224	Prin. of Elec. Engr. II	3
IE 204	Engineering Econ.	3			

TOTAL—Associate in Science Degree in Engineering: 64 semester hours.

* Students may substitute two semesters from another General Studies area, such as Psychology, Philosophy, Sociology, Political Science, etc.

CIVIL ENGINEERING

Upon satisfactory completion of the four-year core program, the student may pursue advanced courses with specialization in one of the many areas of Civil Engineering which are in great demand today to solve the problems of our congested cities and highways and the problems of pollution of all types.

Fifth Year

CE 301	Transportation Engr.	3	CE 302	Building Construction	3
CE 307	Mech. of Materials II	3	CE 303	Steel Design & Constr.	3
ME 301	Thermodynamics I	3	CE 304	Soil Mechanics	3

Sixth Year

	Elective, General Studies	3	CE 306	Hydraulics	3
	Elective, Restricted	3		Elective, General Studies	3
				Elective, Restricted	3

Seventh and Eighth Year

CE 314	Concrete Design & Constr.	3	CE 501	Design Project	3
CE 407	Contracts and Specifications	3		Elective, Free	3
	Elective, Free	3		Electives, Restricted	9
	Electives, Restricted	8			

Selection of Electives

Each student will meet with the Chairman of the Civil Engineering Department during the Spring Semester of his second year in order to select the restricted electives which will, together with the required courses, result in a program of maximum benefit to the student.

TOTAL—Bachelor of Science Degree in Civil Engineering: 128 Semester Hours minimum.

ELECTRICAL ENGINEERING

Upon satisfactory completion of the four-year core program, the student may pursue advanced courses with specialization in electronics, computers, servomechanisms or industrial controls leading to the Bachelor of Science degree in Electrical Engineering.

In order to acquire the Bachelor of Science degree, the student must complete the required courses listed below and a selected group of electives in the field of his choice.

Fifth Year

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
EE 331	Network Analysis I	3	EE 332	Network Analysis II	3
EE 343	Elec. Machines I	3	EE 348	Electronic Devices II	3
EE 347	Electronic Devices I	3		Elective, Math.	3

Sixth Year

EE 351	Elec. Systems Analysis	3	EE 349	Electronics Lab	2
EE 353	Elec. Machines Lab	2		Electives, Restricted	6
	Elective, Gen. Studies	3			

Seventh and Eighth Year

EE 461	Electromagnetic Theory	3		Electives, Restricted	9
	Electives, Restricted	9		Elective, Free	3
	Elective, Free	3		Elective, Gen. Studies	3

Selection of Electives

Restricted electives are to be chosen in consultation with department members and must be approved by the Chairman of the Department of Electrical Engineering.

TOTAL—Bachelor of Science Degree in Electrical Engineering: 128 semester hours minimum.

INDUSTRIAL ENGINEERING

The program in Industrial Engineering is planned to prepare students to apply engineering methods in the solving of the problems of management in industry.

After successful completion of the four-year core program, the student will complete the following required courses and electives as listed.

Fifth Year

IE 214	Management Theory	3	A 113	Industrial Account.	3
IE 243	Work Analysis	3	IE 234	Production Control	3
IE 346	Statistical Analysis	3	IE 502	Operations Research	3

Sixth Year

IE 233	Cost Control	3	IE 504	Laboratory, Thesis	3
	Electives, Restricted	6		Electives, Restricted	6

Seventh and Eighth Year

EC 350	Economics of Labor Relations	3		Elective, Free	3
	*Math. Elective	3		Elective, Gen. Studies	3
	Elective, Gen. Studies	3		Electives, Restricted	9
	Elective, Restricted	3			

Selection of Electives

* IE 347 Probability Analysis, M 231 Linear Algebra, or any 300 or 400 series math courses.

Restricted electives are to be chosen in consultation with department members and must be approved by the Chairman of the Department of Industrial Engineering. Students may secure restricted elective guide sheets from the Evening Division Office or from the department chairman.

TOTAL—Bachelor of Science Degree in Industrial Engineering: 128 semester hours minimum.

MECHANICAL ENGINEERING

Upon satisfactory completion of the four-year core program, the student may pursue advanced courses with specialization in machine design, automatic control, metallurgy, mechanics, etc., leading to the Bachelor of Science degree. The student must complete the required courses listed below and a selected group of electives in the field of his choice.

	Fall	*Sem. Hrs.*		*Spring*	*Sem. Hrs.*
	FIFTH YEAR				
ME 301	Thermodynamics I	3	ME 302	Thermodynamics II	3
ME 344	Mech. of Vibrations	3	ME 311	Machine Elements	3
	Elective, Math.	3	ME 315	M.E. Lab I	2
	SIXTH YEAR				
MT 219	Physical Metallurgy	3	ME 321	Fluid Mechanics	3
	Elective, Gen. Studies	3		Elective, Gen. Studies	3
	Elective, Restricted	3		Elective, Restricted	3
	SEVENTH AND EIGHTH YEAR				
	Elective, Free	3	ME 415	M.E. Lab II	2
	Electives, Restricted	12		Elective, Free	3
				Electives, Restricted	9

Selection of Electives

Each student will meet with the Chairman of the Mechanical Engineering Department during the last semester of his core program in order to define the specialization the student will follow. At this meeting, the student will be assigned a faculty adviser who will assist in the selection of restricted electives that will result in a program of study of maximum benefit to the student. Some of the areas of specialization that are available to the student are the following:

1) Aerospace-Thermal Science
2) Metallurgy and Materials Science
3) Mechanical Design

* General Studies Electives shall be selected from courses in the following areas: English, Humanities, Social Studies and Philosophy.

TOTAL—Bachelor of Science Degree in Mechanical Engineering: 128 semester hours minimum.

Extension Credit Division Programs

BACHELOR DEGREE PROGRAMS IN ENGINEERING

(Groton, Connecticut)

These are Junior and Senior year evening programs given at Groton, Connecticut, leading to the Bachelor of Science degrees in Mechanical and Industrial Engineering. They are open to all qualified students possessing the equivalent of a two year Associate in Science degree in Engineering. The Admissions policy for these courses is the same as stated for the Engineering program at the West Haven Campus. The course outlines for these programs are also the same.

Tuition: $99.00 per 3 semester hour course, which includes registration fees. Textbooks are available at the College Book Store and at the opening of the class.

School of Graduate Studies

Phillip S. Kaplan, Dean

Offering the Degrees

Master of Business Administration

Master of Science in Industrial Engineering

School of Graduate Studies

Phillip S. Kaplan, Dean

The Graduate School at New Haven College offers programs leading to the degrees of Master of Business Administration and Master of Science in Industrial Engineering. The graduate programs are designed primarily for part-time students.

The graduate programs are based on a trimester system. During an academic year there are three trimesters of 13 weeks, including the final examination period. Classes generally meet once each week in the late afternoon or early evening. An academic calendar for the graduate school is published once each year in the spring.

The graduate programs are accredited by the Connecticut Commission for Higher Education and New England Association of Colleges and Secondary Schools. The graduate programs are also approved by the Veterans Administration.

NOTE:

For additional information on the graduate programs, prospective students should request from the Graduate School office a detailed mimeographed statement of either the MBA or MSIE program and an application form, recommendation blanks, and other material required for admission.

Master of Business Administration Program

Objectives of the MBA Program

The general purpose of the MBA program at New Haven College is the education of men and women at the graduate level for careers in business administration. Vital to this objective is the development of a management perspective enabling students to see the totality of management rather than the narrow concerns of the specialist. Specifically, the program strives to:

Develop a professional point of view with respect to managing an organization.

Equip students with the modern analytical and quantitative tools of decision-making.

Impart an understanding of the tasks and problems of management at all levels by means of case studies and stimulation.

Increase the student's knowledge and skills in particular management functions.

Requirements for the MBA Degree

A maximum of 48 semester hours and a minimum of 36 semester hours is required of candidates for the MBA degree.

A maximum of 12 semester hours of required courses in the MBA program may be waived on the basis of undergraduate courses taken at accredited institutions. Courses in the MBA program that may be waived are: Economic Analysis I, Quantitative Methods I, Marketing and Finance.

Candidates for the MBA degree are urged to write a thesis as part of the requirements for the degree. Candidates who elect not to write a thesis must take two additional courses in place of Thesis Seminar I and II, one of which must be BA 636 (Seminar in Management Theory).

Each candidate must complete a minimum of 30 approved graduate courses in residence at New Haven College in order to qualify for the MBA degree.

Of the 6 semester hours of electives in the MBA program, 3 semester hours may be taken in the MSIE program.

Undergraduate courses may not be counted in meeting the minimum 36 credits required for the MBA degree.

Required Courses

	Course Number and Title	*Credit*
*EC 601	Economic Analysis I	3
EC 602	Economic Analysis II	3
*EC 603	Quantitative Methods I	3
EC 604	Quantitative Methods II	3
IE 601	Industrial Engineering	3
*BA 609	Marketing	3
*BA 615	Finance	3
P 619	Behavioral Sciences and Administration	3
A 621	Managerial Accounting	3
EC 625	Industrial Relations	3
EC 629	Public Policies Toward Business	3
BA 633	Managerial Economics	3
†BA 635-636	Thesis Seminar I & II	6
	Electives	6
		48

Elective Courses

	Course Number and Title	*Credit*
†BA 637	Seminar in Management Theory	3
BA 639	Marketing Research	3
BA 641	Mathematical Models and Methods in Marketing	3
BA 645	Current Problems in Corporate Finance	3
BA 649	Investments	3
EC 653	Econometrics	3
BA 657	Forecasting	3
A 661	Advanced Accounting	3
IE 621	Operations Research I	3
BA 669	Insurance: Principles and Practices	3
BA 673	Business Law: Contracts and Sales	3
BA 677	Business Law: Negotiable Instruments, Business Organizations, and Real Estate	3
EC 687	Collective Bargaining	3
EC 691	Labor Legislation	3
IE 683	Systems Analysis	3
IE	Industrial Dynamics	3

*Indicates courses that may be waived.

†Candidates who elect not to write a thesis must take two additional courses in place of Thesis Seminar I & II, one of which must be BA 637 (Seminar in Management Theory).

Master of Science in Industrial Engineering Program

Objectives of the MSIE Program

The general purpose of the MSIE program at New Haven College is the education of men and women at the graduate level for careers using an engineering approach to the solution of interfacing problems of men, materials, and equipment to achieve maximum economy and efficiency.

The program seeks to further the student's knowledge of industrial engineering at the graduate level. The basic guideline for the MSIE program is that set by the American Institute of Industrial Engineers in its definition of industrial engineering: "Industrial engineering is concerned with the design, improvement, and installatoin of integrated systems of men, materials, and equipment. It draws upon specialized knowledge and skill in the mathematical, physical, and social sciences, together with the principles and methods of engineering analysis and design, to specify, predict, and evaluate the results to be obtained from such systems."

Requirements for the MSIE Degree

A maximum of 48 semester hours and a minimum of 30 semester hours is required of candidates for the MSIE degree.

A maximum of 18 semester hours of required courses in the MSIE program may be waived on the basis of undergraduate courses taken at accredited institutions. Courses in the MSIE program that may be waived are: Managerial Accounting, Industrial Engineering I and II, Economic Analysis I, Management Systems, and Statistics and Probability for Management.

Candidates for the MSIE degree are not required to write a thesis but must register for Seminar/Project.The Seminar/Project required the submission of a graduate level paper in which the student reports his investigation and findings relative to an industrial engineering field problem.

Each candidate must complete a minimum of 24 approved graduate courses in residence at New Haven College in order to qualify for the MSIE degree.

Of the 9 semester hours of electives in the MSIE program, 3 semester hours may be taken in the MBA program.

Undergraduate courses may not be counted in meeting the minimum 30 credits required for the MSIE degree.

Required Courses

	Course Number and Title	*Credit*
*A 621	Managerial Accounting	3
*IE601-602	Industrial Engineering I & II	6
*EC 601	Economic Analysis I	3
*IE 604	Management Systems	3
*IE 607	Statistics and Probability for Management	3
IE 611	Budgeting and Control	3
IE 621-622	Operations Research I & II	6
EC 625	Industrial Relations	3
IE 631	Production Engineering	3
IE 681	Industrial Dynamics	3
IE 690	Seminar/Project	3
	Electives	9
		48

*Indicates courses that may be waived.

Elective Courses

	Course Number and Title	*Credit*
IE 612	Industrial Systems Economics	3
IE 619	Enterprise Design and Evaluation	3
IE 623	Operations Research III	3
IE 641	Quality Control Economics	3
IE 643	Reliability & Maintainability	3
IE 651-652	Human Engineering I & II	6
IE 655	Value Engineering	3
IE 663-664	Tooling Techniques I & II	6
IE 683	Systems Analysis	3

Course Descriptions

Undergraduate Schools

Accounting

William G. Holman, Chairman

A 111-112. Introductory Accounting. Credit, 6 semester hours.

Prerequisite to all other courses in accounting.

Offered also in Spring Semester on a two nights per week basis.

Familiarizes the student with fundamental principles of accounting. Supplemented by progress tests, problems, and systematic practice work. Interpretation of assets, liabilities, and net worth; preparation of statements; books of original entry; ledgers; and work at the end of a fiscal period.

A 113. Industrial Accounting. Credit, 3 semester hours.

Open only to Arts and Sciences, Engineering and Law Enforcement students.

Acquaints students with the vocabulary of accounting, the accounting cycle, and the presentation of accounting statements.

A 221-222. Intermediate Accounting. Credit, 6 semester hours.

Prerequisite: A 112.

Continuation at a more advanced level of the principles studied in Introductory Accounting. Adapted to present-day changes in the accounting profession. The corporation, asset valuations, liabilities, installment sales and consignments, analysis and interpretation of financial statements, sources and application of funds, depreciation methods, inventory evaluation, reserves, and surplus analysis. Considerable practice in the form of problem solutions. Reference made to the publications of the professional accounting societies.

A 223-224. Cost Accounting. Credit, 6 semester hours.

Prerequisite: A 112.

Cost concepts, classifications, and systems from the point of view of cost determination (accumulation of material, labor, and overhead by jobs, processes, etc.), cost control (budgets, standards, etc. compared to actuals), and cost analysis and reporting for intelligent management decisions. Differential and comparative cost analysis, break-even analysis, capital expenditure planning. and internal profit measurements and pricing policies.

A 331-332. Advanced Accounting. Credit, 6 semester hours.

Prerequisite: A 222.

Final general accounting course covering all phases of accounting not previously covered and not considered of a specialized nature. Given in two sections, neither dependent upon the other. Upon completion of these sections, the student is prepared for advanced study in specialized accounting problems.

A 333. Auditing I. Credit, 3 semester hours.

Prerequisite: A 222.

Evaluation of the effectiveness of the various accounting systems and procedures as they relate to internal control. Auditing procedures to test reliability are developed, followed by teachings of prerequisites that are to be met for auditing standards applicable to "field work." A practice case links the course to practice.

A 334. Auditing II. Credit, 3 semester hours.

Prerequisite: A 333.

Introduction to the profession of auditors (internal and independent). Intricacies and variety of audit report presentations. Full coverage of auditing standards and latest developments in the field of auditing. Principles of internal control questionnaire and audit program designs.

A 335. Income Tax Procedures I. Credit, 3 semester hours.

Prerequisite: A 112.

The law and the procedures for individual income tax returns. Includes the determination of gross income, ordinary gains and losses, capital gains and losses, dividends, deductions of all kinds, and withholding.

A 336. Income Tax Procedures II. Credit, 3 semester hours.

Prerequisite: A 335.

Continuation of the law and procedures to cover installment sales, inventories, accounting etc., and handling taxes of partnerships, estates and trusts, and corporations, including reorganizations, personal holding companies, etc. Processes of filing returns, paying taxes, and getting refunds. Coverage of Social Security, Federal Estate and Gift taxes.

Art

Elizabeth J. Moffitt, Coordinator

ART 101-102. Drawing and Painting I and II. Credit, 6 semester hours.

Problems in drawing alternate throughout the year with painting projects. Exercises to develop coordination of hand and eye; drawing objects in correct perspective; study of the human figure, its volumes, shifting axes, and action. Exploitation of line as a means of articulating the structure of forms and space.

ART 111-112. Design I and II. Credit, 6 semester hours.

Visual elements of art: texture, line, color, shape, and space, and the factors which affect their organization in visual design. Elementary non-representational design. The study of color.

ART 122. Layout and Printing Techniques. Credit, 3 semester hours.

Techniques of layout, lettering, and design in relation to printing methods.

ART 131. History of Art to the Renaissance. Credit, 3 semester hours.

World art as an expressive and social phenomenon from its earliest beginnings, through religious and cultural cycles, to the visual developments of the Renaissance.

ART 132. History of Modern Art. Credit, 3 semester hours.

Art of the twentieth century in Europe and America, its roots in the past, its function as an expression of our contemporary civilization.

ART 133. Contemporary Art. Credit, 3 semester hours.

Art as an expressive and social phenomenon from 1945 through the developmental happenings of the present.

ART 201-202. Drawing and Painting III and IV. Credit, 6 semester hours.

Prerequisite: Art 102.

Continuation of Drawing and Painting I and II. Perfection of techniques.

ART 203 Commercial Art I. Credit, 3 semester hours.

Problems of graphic arts and advertising. Relations between the arts and methods of communication. An introduction to the fields of advertising, illustration, and editorial art; the role of the advertising agency; and the analysis of ideas for visual statement.

ART 204. Commercial Art II. Credit, 3 semester hours.

Prerequisite: Art 203.

The organization and presentation of a project which demonstrates the student's ability to apply theory on a professional level. Work for presentation in the form of a portfolio is developed through individual instruction and criticism.

ART 211. Lettering. Credit, 3 semester hours.

Prerequisite: Art 111.

Design and execution of basic hand lettering with pen and brush; utilization of hand lettering and type in the design of printed matter; use of letter forms as an element of visual design.

Business Administration

Robert G. Leonard, Chairman

BA 101. Legal Concepts. Credit, 3 semester hours.

Contract law as a foundation for anticipating legal difficulties and making the best use of legal advice. Functional and policy problems in the legal resolution of a controversy. The origin and development of common, statutory, and constitutional law and of the functioning of the judicial system.

BA 102. Business Law. Credit, 3 semester hours.

Agency, partnerships, corporations, and legal aspects of marketing.

BA 105. Principles of Marketing. Credit, 3 semester hours.

The fundamental functions of marketing involving the basic principles of the flow of goods and services from producer to consumer. Marketing methods, policies, and problems of the manufacturer, wholesaler, and retailer are reviewed through analysis of channels of distribution, price policies, competition, and market information.

BA 107. Advertising and Promotion. Credit, 3 semester hours.

Prerequisite: BA 105 or equivalent.

The design, management, and evaluation of the various communications programs involved in marketing and public relations.

BA 113. Business Finance. Credit, 3 semester hours.

Prerequisite: A 111 or Instructor's consent.

Brief study of the unincorporated business enterprise. The modern corporation. Basic security types of stocks and bonds, capital structure, promotion, investment, banking, government regulation, administration, sources and uses of working capital, expansion, combinations, mergers, refinancing and recapitalization, and failure and reorganization.

BA 125. Management and Organization. Credit, 3 semester hours.

The business organization, stressing the conceptual foundations of business. Ethical and behavioral issues in organizing. The authority, responsibility, and accountability in organization and management which underlie businesses of every legal form.

BA 128 Quantitative Techniques in Management. Credit, 3 semester hours.

Prerequisite: M 127 or M 115, or Instructor's consent.

Breakeven analysis, probability theory, inventory models, matrix algebra, linear programming, games and strategy, Markov analysis, queuing theory with a stress on operations research concepts.

BA 203. Physical Distribution Management. Credit, 3 semester hours.

Prerequisite: Junior standing.

Planning, organization, management, and operation of logistics systems, with emphasis on the effective use of transportation to meet the objectives of a business.

BA 216. Statistics. Credit, 3 semester hours.

Prerequisite: BA 128 or Instructor's consent.

Statistical populations, parameters for decision, sample selection and distribution, probability theory, risk and uncertainty in estimation and testing problems, data flow, and error and bias occurring in sampling.

BA 227. Risk and Insurance. Credit, 3 semester hours.

The importance of risk in business affairs; risk situations analyzed; the different methods of meeting risk considered; extended consideration given to the various forms of insurance coverage.

BA 229. Financial Management. Credit, 3 semester hours.

Prerequisite: BA 113.

Analytical techniques for dealing with financial problems and their application to corporate financial management. Capital budgeting, cost of funds, capital structure, valuation, and some aspects of investment problems.

BA 230. Investments. Credit, 3 semester hours.

Prerequisite: BA 113 or EC 134 or Instructor's consent.

Investment media and institutions in the capital markets, the determination of investment values, and the analytical tools of investment appraisal and portfolio management.

BA 231. Industrial Relations. Credit, 3 semester hours.

Prerequisite: BA 125.

Human factors in the management function including union-management relations, history of human relations, individual and group productivity, the company, and the community.

BA 301. Retailing. Credit, 3 semester hours.

Prerequisite: BA 105.

Modern merchandising methods used by retail stores, including store organization, buying, pricing, receiving, marketing, publicity, selling, record keeping, and stock control.

BA 302. Industrial Marketing. Credit, 3 semester hours.

Prerequisite: BA 105.

Practices and policies in the distribution of industrial goods, including purchasing practices, market analysis, channels of distribution, distribution and pricing policies, competitive practices, and operating costs.

BA 312. International Business. Credit, 3 semester hours.

Prerequisite: BA 105.

Principles of International Marketing; the theory of trade and commercial policy; foreign exchange rates, exchange control, and foreign investments; world trade in commodities; methods of exporting and importing; and an evaluation of comparative distribution systems.

BA 315. Marketing Management. Credit, 3 semester hours.

Prerequisite: BA 105.

Policies, practices, and problems in the field of marketing management; product development; product planning for promotion; market investigation, quantitative and qualitative; pricing and price policies; planning the marketing effort; and control of marketing operations.

BA 316 Sales Management. Credit, 3 semester hours.

Prerequisite: BA 105.

Problems and resulting policies encountered in the management of a sales organization. Qualifications and duties of the sales manager, departmental organization; recruiting, selecting, training, stimulating, supervising, compensating, and routing salesmen; and territories, quotas, expenses, promotion, and policies.

BA 333. Applied Statistics. Credit, 3 semester hours.

Prerequisite: BA 216.

Quantitative analysis of business problems, development and testing of statistical inferences, and Bayes' theorem to revise probabilities in the light of information obtained from statistical studies

BA 342. Marketing Research. Credit, 3 semester hours.

Prerequisites: BA 105 and BA 216.

Use of qualitative and quantitative analysis of the markets in which business operates. Sales analysis, advertising research, product planning and analysis, sources of data and methods of their collection, sampling techniques, methods of tabulation and analysis, methods of organizing and conducting marketing research, budget considerations, etc., with outside readings and term reports.

BA 510. Managerial Economics. Credit, 3 semester hours

Prerequisite: Senior standing.

Integrates principles and concepts from the several business and economic fields to exemplify decision processes and strategies applicable to the management of the individual firm.

BA 512. Seminar. Credit, 3 semester hours

Prerequisite: Senior standing.

Each participant will develop a scholarly paper involving independent study and research under faculty guidance.

Chemistry

William H. Nyce, Chairman

CH 103. Introduction to General Chemistry w/Lab Credit, 3 semester hours.

Introductory course in inorganic chemistry dealing with elements, compounds, reactions, atomic structure, chemical bonding solutions, and nuclear reactions. Laboratory work involves weighing and experiments related to the material covered in lectures.

Laboratory Fee: $15.00.

CH 105. General Chemistry I w/Lab. Credit, 4 semester hours.

Prerequisite: CH 103 or one high school unit of chemistry, or written qualifying examination.

Application of nuclear reactions, thermochemistry, electrochemistry, the production and properties of metals, the properties of the halogen and sulfur groups, and organic chemistry. Laboratory work related to the material covered.

Laboratory Fee: $15.00.

CH 106. General Chemistry II w/Lab. Credit, 4 semester hours.

Prerequisite: CH 105.

Chemical equilibria, chemical bonding, solutions, the chemistry of nitrogen, carbon, silicon, and boron; the use of spectroscopy to determine structure of compounds. Laboratory work includes experiments in qualitative analysis.

Laboratory Fee: $15.00.

CH 211. Quantitative Analysis w/Lab. Credit, 4 semester hours.

Prerequisite: CH 106.

Theory and laboratory training in the preparation of solutions, volumetric and gravimetric analysis, and the use of special laboratory instruments.

Laboratory Fee: $15.00.

CH 301-302. Organic Chemistry w/Lab. Credit, 8 semester hours.

Prerequisite: CH 106.

The common reactions of aliphatic and aromatic chemistry, emphasis on reaction mechanisms. Laboratory assignments on the technique needed in organic synthesis.

Laboratory Fee: $15.00 per semester.

CH 321-322. Plastics and Polymer Chemistry. Credit, 6 semester hours.

Prerequisites: CH 106, CH 302.

All phases of the plastics and polymers field, including the chemistry involved, methods, properties of the plastics, and uses of the various materials.

CH 341. Instrumental Methods of Analysis w/Lab. Credit, 4 semester hours.

Prerequisites: CH 106, CH 211.

The theory of various instrumental methods, including visible ultraviolet and infrared spectroscopy, gas chromatography, mass spectrometry, and nuclear magnetic resonance spectroscopy. Laboratory identification of compounds by the methods discussed in the lectures.

Laboratory Fee: $15.00.

CH 351. Qualitative Organic Chemistry w/Lab. Credit, 4 semester hours.

Prerequisite: CH 302.

A one-semester laboratory course dealing with the systematic identification of organic compounds.

Laboratory Fee: $15.00.

CH 361. Nuclear and Radiochemistry. Credit, 3 semester hours.

Prerequisites: CH 106, M 117.

Natural and induced radioactivity, nuclear reactions, and the chemistry of fission products. Methods of detecting and measuring nuclear radiation. The various applications of radiochemistry in industry and the chemical effects of radiation.

CH 401-402. Advanced Organic Chemistry. Credit, 6 semester hours.

Prerequisite: CH 302.

The mechanism of organic reactions, advanced problems in synthetic organic chemistry, and special topics such as stereochemistry and photochemistry.

CH 421-422. Advanced Inorganic Chemistry w/Lab. Credit, 8 semester hours.

Prerequisite: CH 431. Corequisite: CH 432.

Modern structural concepts, reaction mechanisms, the application of principles of physical chemistry and bonding theory in inorganic chemistry.

Laboratory Fee: $15.00 per semester.

CH 431-432. Physical Chemistry w/Lab. Credit, 8 semester hours.

Prerequisites: CH 106, PH 202, and M 203.

Fundamental laws of gases, thermodynamics, the theory of atomic and molecular structure, kinetics, and phase equilibria. Laboratory work enables the student to evaluate this subject by studying physical and chemical data.

Laboratory Fee: $15.00 per semester.

CH 433. Advanced Physical Chemistry. Credit, 3 semester hours.

Prerequisite: CH 432.

Emphasis on the fundamentals of quantum mechanics, statistical mechanics, molecular bonding theory, and spectroscopy. Offered only in the evening.

CH 441. Analytical Chemistry w/Lab. Credit, 4 semester hours.

Prerequisite: CH 431. Corequisite: CH 432.

Application of instrumental methods to inorganic and organic methods of analysis, including mass, ultraviolet and infrared spectrophotometry, chromatography, and electroanalytical analysis.

Laboratory Fee: $15.00

CH 451-452. Thesis for Undergraduate Chemistry Majors w/Lab. Credit, 4 semester hours.

Prerequisites: CH 302, CH 432.

An original investigation in the laboratory under the guidance of a member of the department. Oral discussion of the completed work before the staff at the end of the second semester. Final thesis report. Required for all senior chemistry majors.

Laboratory Fee: $15.00 per semester.

CH 461. Chemical Spectroscopy: Technique. Credit, 3 semester hours.

Prerequisite: CH 432.

Introduction to the elementary theory with emphasis on techniques and interpretation of data obtained in applications of infrared, Raman, visible ultraviolet, nuclear quadrupole, electron spin, and nuclear magnetic resonance spectroscopy to the solution of chemical problems. Offered only in the evening.

CH 511-512. Seminar I and II. Credit, 2 semester hours.

Prerequisites: CH 302, CH 432.

Reports and discussions in various fields of chemistry reviewed by students and staff.

Plant Visitations. Credit, none.

Opén to junior and senior chemistry majors. Visits to plants in the area to investigate plant and laboratory facilities in the chemical industry.

SC 261-262. Biochemistry w/Lab. Credit, 8 semester hours.

(See under Science.)

Civil Engineering

John C. Martin, Chairman

CE 201. Statics. Credit, 3 semester hours.

Prerequisites: M 118 and PH 108.

Composition and resolution of forces in two and three dimensions. Equilibrium of forces in stationary systems. Analysis of trusses. Centroids and second moments of areas, distributed forces, friction, shear and bending moment diagrams.

CE 202. Mechanics of Materials I. Credit, 3 semester hours.

Prerequisite: CE 201.

Elastic behavior of structural elements under axial, flexural, and torsional loading. Stress in and deformation of members, including beams. Lectures supplemented with laboratory exercises.

CE 203. Surveying. Credit, 2 semester hours.

Theory and practice of engineering measurements using tape, level, and transit. Practice in topographic mapping, making of profiles, and computations to determine areas of land and volumes of earthwork.

CE 301. Transportation Engineering. Credit, 3 semester hours.

Prerequisite: IE 204.

Development, organization, administration, and interrelation of transportation systems and facilities, including highways, railroads, airports, rapid transit systems, waterways, and pipe lines. Emphasis placed on economics of location of resources, industry, and population.

CE 302. Building Construction. Credit, 3 semester hours.

Initiation into the planning and anatomy of buildings, materials available and their uses, some principles of construction procedures, general estimating of costs, and relative merits of various types of construction.

CE 303. Steel Design and Construction. Credit, 3 semester hours.

Prerequisite: CE 307.

Analysis, design and construction of steel structures. Design of frames, members, connections and other related topics. Tension members, compression members, beams, girders, trusses and rigid frames. Fabrication and erection, including shop practice.

CE 304. Soil Mechanics. Credit, 3 semester hours

Prerequisites: M 203 and CE 202.

Structural composition of the earth's crust and the mechanics of its formation. Soil classifications and physical properties are related to the principles underlying the behavior of soils subjected to various loading conditions. Subsurface exploration and laboratory exercises.

CE 305. Highway Engineering. Credit, 3 semester hours.

Prerequisite: CE 301.

Study of traffic, methods of making traffic surveys, safety and accident records, and methods of traffic control. Emphasis on planning of major highways, intersections, and urban streets. Study of pavements, drainage, and general administration and operation.

CE 306. Hydraulics. Credit, 3 semester hours.

Prerequisite: ME 204.

The mechanics of fluids and fluid flow. Laminar and turbulent flow. Flow in pipes and open channels. Orifices and weirs. Fluid pressures. Wave action and erosion. Lectures supplemented with laboratory demonstrations.

CE 307. Mechanics of Materials 2. Credit, 3 semester hours.

Prerequsite: CE 202.

Elastic and plastic behavior of structural elements such as beams, columns, and shafts under direct and combined loading. Ultimate strength design, theory of failure, composite member design, and an introduction to satically indeterminate structures.

CE 314. Concrete Design and Construction. Credit, 3 semester hours.

Prerequisites: CE 307.

Analysis, design, and construction of both plain and reinforced concrete structures. Design, utilizing both working stress and ultimate strength techniques, of beams, slabs, columns, and walls. Construction methods, including forming, reinforcing, concrete placing, prestressing and pre-casting will be described.

CE 401. Foundation Design and Construction. Credit, 3 semester hours.

Prerequsite: CE 304.

Design of isolated and combined footings, mats, retaining walls, piers, abutments, pile foundations, and similar structural elements used to safely support buildings, bridges, and other structures.

CE 402. Water Supply and Power. Credit, 3 semester hours.

Prerequisite: CE 306.

Design of water supply, storage, treatment, and distribution systems. Principles of ground water as it pertains to water supply and wells. Introduction to desalination methods, including economic considerations. Water pollution and its control. Principles of hydroelectric power development.

CE 403. City Planning. Credit, 3 semester hours.

Prerequisite: CE 301.

Engineering, social economic, political, and legal aspects of city planning. Emphasis placed on case studies of communities in Connecticut. Zoning. Principles and policies of redevelopment.

CE 404. Sanitary Engineering. Credit, 3 semester hours.

Prerequisite: CE 402.

Planning of sewer systems, methods of sewage treatment, general construction and operation of plants, handling of industrial and solid wastes. Incineration.

CE 405. Indeterminate Structures. Credit, 3 semester hours.

Prerequisites: CE 303 and CE 314.

Analysis and design of continuous beams, rigid frames, arches, and multi-story structures of concrete and steel. Elastic and plastic design principles.

CE 407. Contracts and Specifications. Credit, 3 semester hours.

Prerequisite: CE 302.

Principles of contract formation, execution, and termination. Study of specifications and practice in their preparation. Other legal matters of importance to engineers.

CE 501. Design Project. Credit, 3 semester hours.

Prerequisite: CE 407.

Planning and design of an engineering project, starting with map and general requirements as provided by an owner. Preparation of design drawings for the layout and structures. Estimate of cost. Planning construction procedures and schedule.

Economics

Phillip S. Kaplan, Chairman

EC 133. Principles of Economics I. Credit, 3 semester hours.

Foundations of economic analysis, including economic progress; resources, technology, private enterprise, profits and the price system. Macroeconomics including national income, employment and economic growth. Price levels, money and banking, the Federal Reserve System, theory of income, employment and prices, business cycles and problems of monetary, fiscal, and stabilization policy.

EC 134. Principles of Economics II. Credit, 3 semester hours.

Prerequisite: EC 133.

Microeconomics including markets and market structure and the allocation of resources. The distribution of income, the public economy, the international economy, and current economic problems.

EC 300. Economic History of the U. S. Credit, 3 semester hours.

Development of American economic life in the various stages of agriculture, trade, industry, finance, and labor. Change of economic practices and institutions, particularly in business, banking, and labor. The changing role of government.

EC 310. Principles of Economic Geography. Credit, 3 semester hours.

Distribution of resources, industries, and population in relation to physical, economic and technological factors. Principles of economic location and regional development.

EC 311. Government Regulation of Business. Credit, 3 semester hours.

Prerequisites: EC 133-134.

An appraisal of public policy toward transportation, trusts, monopolies, public utilities, and other forms of government regulation of economic activity.

EC 314. Public Finance. Credit, 3 semester hours.

Prerequisites: EC 133-134.

Theory and practice of public taxation. The budgetary process at all levels of government.

EC 320. Mathematical Methods in Economics. Credit, 3 semester hours.

Prerequisites: M 115-116.

Applications of various mathematical concepts and techniques in macroeconomic and microeconomic analysis. Special emphasis on the design and interpretation of mathematical models of economic phenomena.

EC 336. Money and Banking. Credit, 3 semester hours.

Prerequisites: EC 133-134.

Nature and functions of money, commercial banking system, Federal Reserve System and the Treasury, monetary theory, financial institutions, international financial relationships, history of money and monetary policy in the United States, and current problems of monetary policy.

EC 340. Intermediate Economic Analysis. Credit, 3 semester hours.

Prerequisites: EC 133-134.

Theory of product and factor pricing in markets. Uses and limitations of some general methods of economic analysis. Recommended for students planning to take advanced level studies in economics.

EC 342. International Economics. Credit, 3 semester hours.

Prerequisites: EC 133-134.

The role, importance, and currents of international commerce; the balance of international payments; foreign exchange and international finance; international trade theory; problems of balance of payments adjustment; trade restrictions; international control of raw materials; economic development and foreign aid.

EC 345. Comparative Economic Systems. Credit, 3 semester hours.

Prerequisites: EC 133-134.

A comparative study of the economic organization, resource allocation and growth problems of the United States, British and French economic systems and the economic systems of the U.S.S.R., Poland, and Yugoslavia.

EC 350. Economics of Labor Relations. Credit, 3 semester hours.

Prerequisites: EC 133-134.

History of the union movement in the United States, union structure and government, problems of collective bargaining, economics of the labor market, wage theories, unemployment, governmental policy and control, and problems of security.

EC 410. Econometrics. Credit, 3 semester hours.

Prerequisite: EC 320.

The application of mathematical and statistical methods to both micro- and macroeconomic policy issues.

EC 440. Economic Development. Credit, 3 semester hours.

Prerequisites: EC 133-134.

Economic problems of underdeveloped countries and the policies necessary to induce growth. Individual projects required.

EC 442. Economic Thought. Credit, 3 semester hours.

Prerequisites: EC 133-134.

The development of economic doctrine from mercantilism and Adam Smith to the thinking of modern day theorists. Emphasis upon the main currents of thought with the applicability to present-day problems. Individual study and reporting.

EC 445. National Income Analysis and Business Cycles. Credit, 3 semester hours.

Prerequisites: EC 133-134, EC 336, and A 111.

An investigation of the makeup of the national income and an analysis of the factors that enter into its determination; the nature of economic fluctuations and a survey of theories explaining the causes of cycles in general economic activity; counter-cyclical policies; unemployment and economic growth; forecasting economic activity.

EC 450. Thesis. Credit, 3 semester hours.

The undertaking of a written report on a research project. No class meetings, but periodic conferences with the thesis supervisor. Required of all majors.

Education

Philip Olgin, Director of Teacher Education

Note: The following courses are required for Secondary School Teaching Certification: ED 310 and 341, P 216 and 315, PHL 340.

P 216. Developmental Psychology. Credit, 3 semester hours.

See Psychology.

P 315. Psychology of Learning. Credit, 3 semester hours.

See Psychology.

PHL 340. History and Philosophy of Education. Credit, 3 semester hours.

See Philosophy.

ED 310. Methods and Materials of Teaching in the Secondary School. Credit, 3 semester hours.

Prerequisites: PHL 340, P 216, P 315, and adequate preparation in the subject to be taught.

Modern teaching procedures in high school subjects; their ideological, philosophical psychological foundations. Methods, materials and teaching aids for each subject area.

ED 341. Supervised Clinical Practice in the Secondary Schol. Credit, 6 semester hours.

To be taken concurrently with ED 310.

Practical experience under guidance of supervising teachers in planning for teaching, in managing the classroom, and in directing the learning activities of pupils. The student teacher will observe and then assume increasing responsibility under supervision.

Educational Workshops

One credit each semester.

ED 100-101. Introduction to Teaching in Secondary Schools.

Freshman year.

ED 102-103. Secondary School Experiences.

Sophomore year.

ED 104-105. Principles and Practices of Secondary Education.

Junior year.

ED 106-107. Workshop in Urban School Teaching, or Concluding Workshop in Secondary School Teaching.

One credit in the Senior Year, Spring semester, following the courses in High School Methods and Student Teaching which will be taken in the Fall semester of the Senior year. Placement and certification activities will occur in these Senior workshops.

NOTE:

Education courses will be offered subject to approval by the State of Connecticut Commission for Higher Education and the Connecticut Department of Education.

Electrical Engineering

John D. Driscoll, Chairman

EE 223-224. Principles of Electrical Engineering. Credit, 6 semester hours.

Prerequisites: PH 209 and M 203 may be taken concurrently.

Basic concepts in modern network theory and network techniques in analyzing simple and complex electric circuits. Definitions of current voltage relations, circuit elements, resistance, inductance, and capacitance. Circuit equilibrium equations, transformation, Kirchoff's laws, network theorems, passive and active networks, superposition. Thevenin and Norton's theorem, d-c transients, solution of simple electric circuits in the sinusoidal steady state by vector and complex algebra. Impedance, capacitance, and resonance concepts, single phase alternating currents and voltages, power relations. Electron devices, diodes, triodes and transistors, amplifiers, equivalent circuits, and applications. Magnetic fields and circuits, electromechanical energy conversion.

EE 331-332. Network Analysis. Credit, 6 semester hours.

Prerequisites: EE 224 and M 204.

Review of basic current theory. Loop and nodal equations and methods of solution. Matrix notation. General network theorems. Input and transfer admittances, impedances and transfer functions. Symmetrical component analysis. Three-phase circuits, balanced and unbalanced. Other polyphase circuits. Fourier series and integrals. Fourier and LaPlace transforms, direct and inverse. Operational methods applied to transients in linear systems.

EE 336. Instrumentation Electronics. Credit, 3 semester hours.

Prerequisites: EE 224 and M 204.

Cannot be taken for credit by electrical engineering students.

An introduction into instrumentation electronics aiming to provide a working knowledge and understanding of electronic instruments and controls as used in industrial processes. Starting with simple electrical measurements, the course subsequently deals with power supplies, transistor and vacuum tube amplifiers, and oscillators. Practical servo systems and operational amplifiers are treated, as well as simple circuits for electronic switching, timing, and digital counting.

EE 343-344. Electrical Machines. Credit, 6 semester hours.

Prerequisites: EE 224 and EE 331-332, which may be taken concurrently.

Processes for the electro-mechanical conversion of energy. The fields, forces, and torques in magnetic systems. Theory, characteristics, applications, and design of direct-current machines. Theory, performance, and applications of transformers, AC generators, synchronous motors, single and polyphase induction motors.

EE 347-348. Electronic Devices and Circuits. Credit, 6 semester hours.

Prerequisite: EE 331-332 or may be taken concurrently.

Study of basic circuits making up more complex electronic systems. The first semester includes semiconductor junctions, vacuum diodes and triodes, transistors, and basic amplifier circuits. Power and audio amplifiers, high frequency circuits, and negative resistance devices analyzed in the second semester.

EE 349. Electronics Laboratory. Credit, 2 semester hours.

To be taken concurrently with EE 348.

Laboratory experiments and problems associated with electronic circuits and devices.

Note: Part-time students are charged for a standard 3 semester hour course.

EE 351-352. Electrical Systems Analysis. Credit, 6 semester hours.

Prerequisites: EE 224 and M 204.

A study of the analytical approach to the solution of electrical engineering problems. Review of differential equations and systems applications. Circuit response to special functions. Dual networks. Electrical analogues to mechanical systems. Fourier methods and applications in linear systems. Transfer functions and system response by LaPlace transforms. Convolution and superposition integrals.

EE 353. Electrical Machines Laboratory. Credit, 2 semester hours.

To be taken concurrently with EE 343.

Laboratory experiments and problems associated with the characteristics and applications of AC and DC motors and generators.

Note: Part-time students are charged for a standard 3 semester hour course.

EE 420. Introduction to Systems Engineering. Credit, 3 semester hours.

Prerequisite: EE 351.

Systems engineering principles and practice. Probability and statistics and their application to stochastic systems. Synthesis of systems using block diagram and signal flow graph algebra. Simulation and mathematical models both deterministic and stochastic. Exterior and interior system design, single thread and high traffic theory, competitive theory. Linear programming, group dynamics, information theory. Economics evaluation and optimization of systems projects.

EE 429. Measuring Principles and Transducers. Credit, 3 semester hours.

Prerequisites: EE 336 or EE 347.

The principles of measuring elements and transducers for electrical engineers. Mechanical and industrial engineers who have the necessary prerequisites will also be able to profit from the course. An introduction to the science of measurement (Metrology) and the application of this science to the measurement of quantities of economic value in industrial, military, and scientific processes. Laboratory sessions provide the student with first-hand familiarization of the principles of the subject.

EE 437. Industrial Power Systems Engineering. Credit, 3 semester hours.

Prerequisite: EE 332.

Structure of power and distribution of systems; symmetrical components; analysis of unbalanced polyphase power systems; fault calculations; applications to problems of grounding, relaying, and unbalanced operation of apparatus.

EE 438. Electric Power Transmission. Credit, 3 semester hours.

Prerequisite: EE 437 or EE 332.

The fundamentals of electric generation, transmission, and distribution. Transient performances of non-linear characteristic circuits, and power system stability.

EE 441. Electronic Analog Computers. Credit, 3 semester hours.

Prerequisite: EE 348.

Elements of analog simulation, pulses and wave shapes, operational amplifiers, integrator, differentiator, and constant multiplier and summer. Solution of first-order differential equations and higher order systems, and formulating of signal flow-graphs. Application of computer to problems in engineering.

EE 442. Switching and Logical Design. Credit, 3 semester hours.

Prerequisite: EE 348.

Fundamentals of switching circuits, number systems, Boolean algebra and its use in logical design techniques, switching theorems, minimization methods, coding, error detection and correction, storage elements, sequential circuits, arithmetic operations, and system design of general purpose digital computer.

E 445. Communications Theory. Credit, 3 semester hours.

Prerequisite: EE 348.

The analysis of communications circuits and the design of the components of communication systems. Signal analysis, transmission of signals, power density spectra, amplitude, and pulse modulation. Performance of communications systems, noise and information transmission theory.

EE 446. Pulse and Digital Circuits. Credit, 3 semester hours.

Prerequisite: EE 348.

A study of circuits currently used in computers and other electronic devices. Topics covered to be chosen from the following: Linear and nonlinear waveshaping, pulse amplifiers, multivibrators, logic circuits and computer subsystems, counters, sweep oscillators, and negative resistance circuits.

EE 450. Semiconductor Electronics I. Credit, 3 semester hours.

Prerequisite: EE 348.

Structure and carrier density of semiconductors. Processes of current flow. Theory of PN junction diodes. Mechanism of current flow in junction transistors. Equivalent circuits and four terminal networks. Low frequency small signal amplifiers. Stability, high frequency circuits, power supply regulators, pulse and switching circuits. Lectures supplemented with laboratory work.

EE 451. Semiconductor Electronics II. Credit, 3 semester hours.

Prerequisite: EE 450 or Instructor's consent.

Measurement of electrical quantities and parameters. Switching power supply regulators. Differential amplifiers. Operational amplifiers. Field effect transistors; analysis and design of circuits. Tunneling process. Tunnel diode and hybrid circuits. Avalanche mode switching and current mode circuits. Integrated circuits.

EE 455-456. Servomechanisms and Feedback Control Systems. Credit, 6 semester hours.

Prerequisite: EE 351.

Differential equations of Physical Systems, transfer function and graphical descriptions of Linear Systems, state variable characterization of Linear Systems, equations and transfer functions of Control System Elements, General Feedback Theory, Time Domain Analysis of Feedback Control Systems, Stability of Linear Control Systems, Nyquist Criterion. Root Locus Technique, Frequency Response, design of Feedback Control Systems, introduction of Non-Linear Control Systems, simulation of control systems on the Analog Computer.

EE 461. Electromagnetic Theory. Credit, 3 semester hours.

Prerequisite: EE 332.

Basic electromagnetic theory as related to the static fields of electric charges and the magnetic fields of steady electric currents. Fundamental field laws. Maxwell's equations, energy distributions, scalar and vector potentials, method of images, boundary relations, magnetization, polarization, time varying electric and magnetic fields, field plotting. Vector mathematics is used in the mathematical analysis.

EE 462. Microwave Fundamentals. Credit, 3 semester hours.

Prerequisite: EE 461.

The development and application of electromagnetic-field theory to the analysis of high-frequency circuits, wave propagation, reflection in various media including waveguides, and resonant cavities. The theory of operation of such devices as klystron, magnetron, and traveling wave tubes.

EE 500. Seminar in Semiconductor Electronics. Credit, 3 semester hours.

Prerequisite: Instructor's consent.

Open to Seniors in Electrical Engineering only.

Special advanced engineering problems in the semiconductor electronics field. Arranged to suit the interest and requirements of the student, under the supervision of a staff member

EE 504. Laboratory Thesis. Credit, 3 semester hours.

Prerequisite: Instructor's consent.

Open to Seniors in Electrical Engineering only.

Advanced laboratory testing and special problems. The student works on problems of his own selection which have been approved by the instructor. The student's work may be in the form of a semester thesis or a series of original experiments

English

Douglas Robillard, Chairman

EA. College Preparatory English. One semester. No credit.

A review of the fundamentals of English for students who do not meet the English requirements for admission to the College. Practice given in writing as well as in grammar.

EB. Reading Laboratory. One semester. No credit.

Helps the student to read faster with greater comprehension, to increase vocabulary, and to study more effectively. Supervised reading, training films, exercises and discussions.

EF. English as a Second Language. One semester. No credit.

Designed for foreign-born students whose English is inadequate to do college-level work. Particular emphasis on individual pronunciation problems and use of American English idioms. Laboratory required.

E 113. English Composition. Credit, 3 semester hours.

Prerequisite: Satisfactory performance on English Placement Examination or completion of EA College Preparatory English.

Theme writing with emphasis on thematic content, paragraphing, sentence construction, grammatical principles, and diction. Reading of essays to stimulate thought and illustrate rhetorical principles.

E 114. Speech. Credit, 3 semester hours.

A disciplined approach to oral communication. Objectives are to develop proficiency in locating, organizing, and presenting material and to help the student gain confidence and fluency when speaking extemporaneously.

E 201-202. World Literature I and II. Credit, 6 semester hours.

Prerequisite: E 113.

Selected translations of non-Western literature and of Western literature from Homer to the present. Emphasis upon literary, cultural and philosophical values.

E 206. Composition and Literature. Credit, 3 semester hours.

Prerequisite: E 113.

Further practice in theme writing. Reading of poetry, fiction, and drama in order to develop skill in analyzing and interpreting literature.

E 211-212. Survey of English Literature I and II. Credit, 6 semester hours.

Prerequisites: E 113, E 206.

Readings in English Literature from its beginnings to the present, with attention to its historical and social backgrounds.

E 213. Survey of American Literature I. Credit, 3 semester hours.

Intellectual and literary movements from Colonial times to the Civil War.

E 214. Survey of American Literature II. Credit, 3 semester hours.

Intellectual and literary movements from the Civil War to the present.

E 217. Survey of Black American Literature. Credit, 3 semester hours.

A study of Black American poets, novelists, essayists and dramatists from the Colonial Era to the present, including such writers as Frederick Douglass, W. E. B. DuBois, Countee Cullen, Richard Wright, James Baldwin, Leroi Jones, and Eldridge Cleaver.

E 220. Report Writing. Credit, 3 semester hours.

Prerequisite: E 113.

Study of the standards inherent in effective reporting, both formal and informal, and of the principles of business letter writing, with practice in writing letters, memos, and reports. To be offered only in Fall semester.

E 267-268. Creative Writing. Credit, 6 semester hours.

Prerequisite: E 206 and Instructor's consent.

Practice in writing the short story, poetry, drama, or non-fiction; choice of genre based upon inclination and ability of the student. Analysis of published materials and student work.

E 301. Literary Criticism and Scholarship. Credit, 3 semester hours.

Major critical theories, with readings from Plato and Aristotle to the present. Bibliographic tools and methods of research.

E 302. History of the English Language. Credit, 3 semester hours.

The development and structure of English, including its Indo-European origins and the elements of Anglo-Saxon. Major emphasis on Middle English and the transition to Modern English. Some study of the distinctive coinages of American English.

E 323. Sixteenth-Century Poetry and Prose. Credit, 3 semester hours.

The social and historical backgrounds of the English Renaissance; readings in the prose writers and in Wyatt, Surrey, Spenser, Sidney, and their contemporaries.

E 326. English Drama to 1642. Credit, 3 semester hours.

The development of the English drama from its beginnings to the middle of the seventeenth century, excluding Shakespeare. Major emphasis upon the Elizabethan and Jacobean drama.

E 341-342. Shakespeare. Credit, 6 semester hours.

E 341 is a prerequisite for E 342.

Introduction to representative comedies, history, plays, tragedies and poems.

E 353. Literature of the Romantic Era. Credit, 3 semester hours.

Poetry and prose of the major Romantics — Wordsworth, Coleridge, Byron, Shelley, Keats, Lamb, and Hazlitt — with attention given to the milieu of the writers, the Continental background and theories of Romanticism.

E 356. Later Nineteenth-Century English Literature. Credit, 3 semester hours.

Poetry and prose from 1830-1900. The works of Tennyson, Browning, Arnold, Swinburne, Carlyle, Mill, Newman, Ruskin, and others studied in the light of the social, political, and religious problems of the period.

E 361. Modern British Literature. Credit, 3 semester hours.

British fiction, drama, and poetry from 1900 to the present. Includes works of Conrad, Joyce, Lawrence, Woolf, Huxley, Forster, Shaw, Yeats, Auden, Spender, and Dylan Thomas.

E 362. The Age of Donne and Milton. Credit, 3 semester hours.

Major writers of prose and poetry during the period 1600-1660: Donne, Milton, Burton, Bacon, Herbert and others.

E 371. Literature of the Neoclassic Era. Credit, 3 semester hours.

British writers of the period 1660-1760, with emphasis upon Dryden, Pope, Swift, Johnson, and others.

E 375. The Age of Chaucer. Credit, 3 semester hours.

A detailed reading and critical study of Chaucer's *Canterbury Tales*, with some study of his predecessors and the medieval cultural milieu.

E 390. The English Novel I. Credit, 3 semester hours.

The development of the novel in England from Defoe to Dickens and Thackeray.

E 391. The English Novel II. Credit, 3 semester hours.

The development of the novel in England from George Eliot and Hardy to the present.

E 392. Literature of the American Renaissance. Credit, 3 semester hours.

Intensive study of the writings of such figures as Emerson, Thoreau, Hawthorne, Melville, and Whitman, whose works are analyzed in the light of the influences and traditions which led to America's cultural independence.

E 402. Modern Poetry. Credit, 3 semester hours.

A study of the works of representative twentieth-century British, American, and Continental poets.

E 405. Modern Drama. Credit, 3 semester hours.

Principal movements in Continental, British, and American drama from Ibsen to the present.

E 406-409. Continental Fiction. Credit, 3 semester hours.

(One course each semester.)

Selected fiction, in translation, of the European masters, primarily Russian, French, German, or Spanish. Topic to be announced for each semester.

E 478. Contemporary American Literature. Credit, 3 semester hours.

Intensive study of developments in American fiction, poetry, and drama of our time. Readings in the works of such writers as Wolfe, Malamud, Bellow, Theodore Roethke, Robert Lowell, Arthur Miller, and Tennessee Williams.

E 491. Studies in English Literature. Credit, 3 semester hours.

Special topics in English Literature, which may include concentration upon a single figure, a group of writers, or a literary theme. Several sections, each on a different topic, may run concurrently.

E 492. Studies in American Literature. Credit, 3 semester hours.

Special topics in American Literature, which may include concentration upon a single figure, a group of writers, or a literary theme. Several sections, each on a different topic, may run concurrently.

Foreign Languages

Bruce A. French, Coordinator
Robert W. Woodworth, Director of Language Laboratory

FR 101-102. Elementary French. Credit, 6 semester hours.

Stresses pronunciation, aural comprehension, and basic conversation; the fundamental principles of grammar; reading comprehension. Not open to students who offer for college entrance more than one year of high school French.

FR 201-202. Intermediate French. Credit, 6 semester hours.

Prerequisite: French 101-102 or equivalent.

Conversation based on the reading of modern prose texts; drill in written and oral self-expression; a review of the principles of grammar.

FR 301-302. Main Currents of French Literature. Credit, 6 semester hours.

Prerequisites: FR 201-202 or equivalent.

Writings representative of significant currents in French literature from the Middle Ages to the Twentieth Century. Opportunity to improve listening and speaking ability. Conducted in French. Laboratory optional, but recommended.

GR 101-102. Elementary German. Credit, 6 semester hours.

Stresses the fundamental principles of grammar; training in pronunciation, aural comprehension and basic conversation. Some work in the language laboratory outside of class may be required. Not open to students who offer for college entrance more than one year of high school German.

GR 201-202. Intermediate German. Credit, 6 semester hours.

For students with two years of high school German or one year of college German. Reading comprehension (some scientific texts), advanced study of grammar, composition, and oral self-expression.

IT 101-102. Elementary Italian. Credit, 6 semester hours.

Stresses pronunciation, aural comprehension, and basic conversation; instruction in the fundamental principles of grammar; training in reading comprehension. Not open to students who offer for college entrance more than one year of high school Italian.

IT 201-202. Intermediate Italian. Credit, 6 semester hours.

Prerequisite: IT 101-102 or equivalent.

For students with two years of high school Italian or one year of college Italian. Conversation, advanced study of grammar and composition. Reading in classical and modern writers.

RU 101-102. Elementary Russian. Credit, 6 semester hours.

Fundamental principles of grammar; training in pronunciation, aural comprehension, and basic conversation. Some work in the language laboratory outside of class may be required. Not open to students who offer for college entrance more than one year of high school Russian.

RU 201-202. Intermediate Russian. Credit, 6 semester hours.

For students with two years of high school Russian or one year of college Russian. A review and continuation of the principles of grammar, greater emphasis on reading comprehension, further drill in written and oral self-expression.

SP 101-102. Elementary Spanish. Credit, 6 semester hours.

Stresses pronunciation, aural comprehension, and basic conversation; instruction in the fundamental principles of grammar; training in reading comprehension. Not open to students who offer for college entrance more than one year of high school Spanish.

SP 201-202. Intermediate Spanish. Credit, 6 semester hours

Prerequisite: SP 101-102 or equivalent.

For students with two years of high school Spanish or one year of college Spanish. Conversation, advanced study of grammar and composition. Works of prominent Spanish-American authors will be read.

SP 301-302. Main Currents of Spanish Literature. Credit, 6 semester hours.

Prerequisites: SP 201-202 or equivalent.

Writings representative of significant currents in Spanish literature from the Middle Ages to the Twentieth Century. Opportunity to improve speaking and listening ability. Conducted in Spanish. Laboratory optional, but recommended.

History

Thomas Katsaros, Chairman

HS 111. Western Civilization I: to 1700. Credit, 3 semester hours.

Western Civilization from the ancient beginnings to mid-seventeenth century. The patterns of the social, cultural and political aspects of ancient, medieval, and early modern eras that have shaped the Western tradition.

HS 112. Western Civilization II: from 1700 to present. Credit, 3 semester hours.

Prerequisite: HS 111.

European history from the Enlightenment to the present. Emphasis on economic and social changes, political history, the expansion of Europe and its international effects. Nationalism, imperialism, and socialism stressed.

HS 131. History of the Black Man in America. Credit, 3 semester hours.
A comprehensive study of the Negro in the United States, including African antecedents and an account of slavery, Emancipation and its aftermath, and Negro contributions to the Modern era.

HS 211. American History to 1865. Credit, 3 semester hours.
The development of the American nation from colonial times to 1865. Significant economic, social, political, and institutional developments.

HS 212. American History from 1865. Credit, 3 semester hours.
United States history from the Reconstruction through the contemporary era. Expanding industrialism, the changing concepts of the role of government, and the United States in world affairs.

HS 221. Comparative European Political Systems. Credit, 3 semester hours.
Prerequisites: HS 111-112.
Historical comparative approach to the political institutions of the United Kingdom, U.S.S.R., Federal Republic of Germany, and France. Emphasis on the relationship between Western and Eastern political systems.

HS 308. Social and Intellectual History of the United States. Credit, 3 semester hours.
Prerequisites: HS 211-212.
Leading ideas that have shaped important periods of American history. The colonial mind and spirit, the democratic upheaval, sectionalism—war—and reconstruction, the industrialization of the country, religion as it met the new age of science and economics, agrarian revolt, overseas possessions, the beginning of the end of isolation.

HS 310. The History of Modern England. Credit, 3 semester hours.
Prerequisites: HS 111-112.
British institutions and industrial life from 1688 to the present. Traces the movement of British society from its eighteenth-century aristocratic base through the Liberal experiment of the nineteenth- to twentieth-century collectivism; England's role in international affairs.

HS 311. American Colonial History. Credit, 3 semester hours.
Prerequisites: HS 211-212.
The European background for the discovery and colonization of the New World, and the history of the British colonies in North America until Independence. The transformation of transplanted institutions within the American environment.

HS 312. The U. S. in the Twentieth Century. Credit, 3 semester hours.
Prerequisites: HS 211-212.
Political history, social trends, and intellectual movements. Study of the expansion of the functions of government to meet modern complex problems arising from social and cultural trends and from the involvement of the United States in global politics.

HS 314. The History of Germany from 1648. Credit, 3 semester hours.
Prerequisites: HS 111-112.
From the Treaty of Westphalia to the unification of Germany, the imperial era, the two World Wars, and the rise and fall of National Socialism to the problems of divided Germany today.

HS 315. The History of Europe in the Nineteenth Century. Credit, 3 semester hours.
Prerequisites: HS 111-112.
The main political, economic, and intellectual trends in Europe in the period from 1815 to 1914. The effects of industrialism, liberalism, and socialism on European society and culture. In international affairs, the impact of nationalism on European power politics and the failure of the major powers to resolve their differences in the Balkans.

HS 317. Renaissance and Reformation. Credit, 3 semester hours.
Prerequisites: HS 111-112.
Economic, political, intellectual, and religious developments in Continental Europe from 1300 to 1650; intellectual and social change during the transition from medieval to modern times; dynastic conflicts within the emerging state system.

HS 321. The History of Ancient Greece and Rome. Credit, 3 semester hours.

Prerequisites: HS 111-112.

From the Homeric period to the year 500 A.D. Events, institutions, and ideas that have shaped the Western tradition. The political, social, economic, and cultural problems that caused the decline of these civilizations.

HS 330. History of Russia. Credit, 3 semester hours.

Prerequisites: HS 111-112.

From the thirteenth century, with particular emphasis on the transition from an agrarian to an industrial society in the period since the emancipation of the serfs in 1861. The role of the U.S.S.R. in world affairs since the Revolution of 1917; its impact upon Asia and the West.

HS 401. Europe in the Twentieth Century. Credit, 3 semester hours.

The history of Western and Central Europe since World War I viewed from the perspective of Europe's rapidly changing role in world history. Europe's political, social, and economic adjustment to the Russian Revolution and Nazism, the emergence of America and Russia as super-powers, and the loss of overseas possessions.

HS 406. Modern Japanese History. Credit, 3 semester hours.

The institutional and cultural traditions of Japan, the nature of Japan's feudal society after 1600, and the interplay of indigenous and foreign elements in the changes which affected thought, politics, and society. After the coming of Perry, the adoption and reflection of parliamentary government and the reforms that followed World War II.

HS 407. Colonial and Early Latin America. Credit, 3 semester hours.

Prerequisites: HS 111-112, 211-212.

European and Indian origins, the formation of a colonial society and culture in the sixteenth and seventeenth centuries, the background and course of anti-colonial upheaval in the early nineteenth century, the problems from the post-independence period to 1890.

HS 408. The History of Modern Latin America. Credit, 3 semester hours.

Prerequisites: HS 111-112, 211-212.

Latin America since 1890, including the distinctive histories of the major nations of Mexico, Brazil, Argentina, and Chile as well as the characteristics, problems, and prospects of the area as a whole. Inter-American relations and current revolutionary movements.

HS 409. Modern Chinese History. Credit, 3 semester hours.

The traditional society as it existed prior to the Opium War, China's confrontation with the West and its effect on political, intellectual, and economic developments. The formation and evolution of the present Chinese regime.

HS 410. A History of the Middle East. Credit, 3 semester hours.

The rise and spread of Islam and the development of an Arabic civilization. Primary attention on Turkey, Egypt, and Iran, the problems created by the Western impact on the peoples and governments of the area, the effect of the Zionist movement on Middle East politics.

HS 412. The British Empire and Commonwealth. Credit, 3 semester hours.

Prerequisites: HS 111-112.

The origins and development of the British Empire in its major areas and the emergence of the modern Commonwealth of Nations. The second part of the course will deal exclusively with Canadian history from the time of discovery to the present; stress on nineteenth- and twentieth-century developments including Canadian-United States relationships.

HS 413. A History of Africa in Modern Times. Credit, 3 semester hours.

Morocco, Algeria, Tunisia and Libya, stressing the institutional histories of these countries, which enabled them ultimately to expel European imperialism. The second part of the course deals with nineteenth-century Africa, the partition of Sub-Sahara Africa by the European powers, the period of colonial domination. and the emergence of the independent states after 1945.

HS 415. Historiography. Credit, 3 semester hours.

The development of schools of historical thought and interpretation from Thucydides to Toynbee.

HS 416. Senior Seminar. Credit, 3 semester hours.

Prerequisite: 33 semester hours in History.

Required of all liberal arts students majoring in History, in the last semester of their senior year. The undertaking of an independent study and research project presented in an oral and written form.

Industrial Engineering

Francis J. Costello, Chairman

IE 102. Introduction to the Computer. Credit, 3 semester hours.

Prerequisites: M 002 or equivalent.

A first level course in computers for engineering and science students. An understanding of the interfacing of man, language, and computers is developed through Boolean algebra, logic theory, and soft hardware analysis. The student learns to write and debug FORTRAN IV programs via the campus computer.

Laboratory Fee: $3.00

IE 105. Technical Data Processing. Credit, 3 semester hours.

Prerequisite: M 002 or equivalent.

A first level course in computers for business, art, and social science students. An understanding is developed of the problems of interrelating the man, computer, and business systems with a data processing approach. The student learns to write and debug FORTRAN IV programs via the campus computer.

Laboratory Fee: $3.00

IE 119. Industrial Safety and Hygiene. Credit, 3 semester hours.

Prerequisite: IE 114, IE 214 or BA 125.

This is a basic course in industrial accident prevention and industrial hygiene, and covers: managerial accident prevention functions and responsibilities; injury data development, usage, and validity; machine guarding techniques and guard development, including point-of-operation drives; personal protective equipment; fire prevention and control, including flammable solvents, dusts and their characteristics; electrical hazards; hand tools, power and manual; employee training; communications; hazard analysis; accident investigation. Industrial hygiene problems caused by solvents, dusts, noise, radiation are studied, as well as regulatory bodies, laws, and catastrophe hazards.

IE 204. Engineering Economics. Credit, 3 semester hours.

Prerequisite: M 116 or M 117.

A quantitative analysis of applied economics in engineering practice; the economy study for comparing alternatives; interest formulae; quantitative methods of comparing alternatives; intangible considerations; selection and replacement economy for machines and structures; break-even and minimum cost points; depreciation; relationship of accounting to the economy study; review of current industrial practices. Promotes logical decisions through the consideration of alternative courses of action.

IE 214. Management Theory. Credit, 3 semester hours.

Prerequisite: Junior or Senior Status.

Provides insight into the elements of the managerial process and develops a rational synthesis of the mass of detail comprising the subject matter of management. Focusing largely upon the complex problems of top and middle-level management, this course investigates what managers do under given circumstances, yet stresses the on-going activities of management as part of an integrated, continuous process.

IE 223. Personnel Administration. Credit, 3 semester hours.

Prerequisite: IE 114, IE 214 or BA 125.

Provides a foundation in fundamental concepts and a general knowledge of techniques in the administration of personnel relations. The nature of personnel administration, the handling of personnel problems, employee attitudes and morale. Techniques of personnel administration: recruitment, interviews, placement, training, employee rating, as well as wage policies and administration. In order to secure breadth and depth in the approach to personnel problems, simple case studies are used at appropriate points throughout the course.

IE 224. Programming. Credit, 3 semester hours.

Prerequisites: IE 102 or IE 105; and M 115.

Introduces the student to computer programming, starting with the preparation of block diagrams, program coding, program compiling, and debugging. At least two different programming languages are learned and actual jobs programmed. The programs, written by the students, are then tested and debugged on a computer.

Laboratory Fee: $8.00.

IE 233. Cost Control. Credit, 3 semester hours.

Prerequisites: A 112 or A 113; M 115.

Basic analysis of cost control techniques. Designed to give members of the management team the underlying rudiments of cost control systems they will be using and by which they will be measured and controlled. Theory of standard costs, flexible budgeting, and overhead handling techniques emphasized by analytical problem solution.

IE 234. Production Control. Credit, 3 semester hours.

Prerequisites: IE 114, IE 214 or BA 125; and M 115.

The basic principles that govern production control in an industrial plant. These principles are worked out in the problems of procuring and controlling materials, in planning, routing, scheduling, and dispatching. Familiarizes the student with present and new methods used in this field, including O. R. techniques.

IE 243. Work Analysis. Credit, 3 semester hours.

Prerequisite: M 115.

An introductory course in Motion Analysis, Methods Analysis, and Work Measurement. Motion and Methods Analysis techniques include the Principles of Motion Economy, Process Analysis charting, Operations Analysis, Activity Analysis, and Work Design Layout Analysis. Students are required to design a work place project which will be filmed on CCTV for analysis.

Work measurement includes an introduction to Time Study fundamentals and Pre-Determined Time Systems.

IE 330. Industrial Automation. Credit, 3 semester hours.

Prerequisites: IE 102, EE 224, ME 204.

Develops the fundamental principles of automation, what automation is and how it is implemented in typical mechanical and processing industries. Topics covered include: single loop design, high traffic design, and competitive level design techniques. Tools for automation include: computers, feedback control, simulation, and digital and analog logic.

IE 344. Advanced Work Analysis. Credit, 3 semester hours.

Prerequisite: IE 243.

A course extending the principles introduced in the prerequisite course including the development of Standard Data Systems, formula construction in standard data, Methods-Time-Measurement and Master Standard Data predetermined time systems, Work Sampling, Standards on Indirect Work, Wage Payment Plans, and the use of Closed Circuit TV as a Methods training tool.

IE 346. Statistical Analysis. Credit, 3 semester hours.

Prerequisite: M 203.

Provides an introduction to the application of statistical techniques to industrial and engineering problems, probability and distribution theory, measures of central tendency and dispersion in relation to population and samples, as well as applications of algebraic methods in industrial practice, including advanced statistical methods.

IE 347. Probability Analysis. Credit, 3 semester hours.

Prerequisite: BA 216 or IE 346.

Develops the theory of probability and related applications. Introduces such relevant areas as: combinations and permutations, probability space, laws of large numbers, random variables, conditional probability, Bayes' Theory, Markov chains, and stochastic processes.

IE 402. Numerical Controls and Methods. Credit, 3 semester hours.

Prerequisites: IE 102, ME 124, M 204.

Involves the development and evaluation of methods for computing required numerical results from given numerical data specifically oriented toward numerical controlled machines.

IE 436. Quality Control. Credit, 3 semester hours.

Prerequisite: IE 346.

Economics of quality control; modern methods used by industry to achieve quality of product; preventing defects; organizing for quality; locating chronic sources of trouble; coordinating specifications, manufacturing, and inspection; measuring process capability, using inspection data to regulate manufacturing processes; control charts; selection of modern sampling plans.

IE 443. Factory Planning. Credit, 3 semester hours.

Prerequisites: IE 243, IE 204.

Factors in plant location, design, and layout of equipment. The basic principles of obtaining information essential for carrying out such investigations. Survey of such practices as material handling, storage and storeroom maintenance, and use of service departments in modern factories.

IE 502. Operations Research (Engineering). Credit, 3 semester hours.

Prerequisite: BA 216 or IE 346.

The Operations Research area is oriented to various mathematical and near-mathematical methods for getting answers to certain kinds of business problems. Simulation including Monte Carlo, queuing, the Flood method for assigning jobs, the transportation method, and linear programming including the simplex method with both algebraic solution and tableaus. Course is designed for Engineering students.

IE 503. Operations Research (Business). Credit, 3 semester hours.

Prerequisite: BA 216 or IE 346.

Similar to IE 502, but oriented toward Business students, with emphasis on specific applications to business problems.

IE 504. Laboratory—Thesis. Credit, 3 or 4 semester hours.

Prerequisite: Senior I.E. status.

Advanced laboratory testing and special problems. The student works on problems of his own selection which have been outlined by him and have received approval. They may be in the form of a semester thesis or a series of original experiments.

IE 507. Systems Analysis (General). Credit, 3 semester hours.

Prerequisite: Junior status required.

Presents the analytical and conceptual techniques upon which systems analysis and development is based, and applications to non-business as well as business operations. Development of case studies and their applications independently oriented to the student's major area of interest.

IE 508. Systems Analysis (Business and Industrial). Credit, 3 semester hours.

Prerequisites: IE 114, IE 214 or BA 125 and M 115.

Present the analytical and conceptual techniques upon which systems analysis and development is based, and applications to business and industrial fields. Development of case studies and their applications independently oriented to the student's major area of interest.

IE 510. Business Games. Credit, 3 semester hours.

Prerequisites: IE 114, IE 214 or BA 125; and BA 216 or IE 346.

The Business Games area gives the student the opportunity of correlating his entire course of study in a management simulation framework. These training games make use of simulation models that explore specific management areas in depth. Operations research techniques of scientific management are developed. The purposes of these games are as follows: (1) to serve as a framework for training sessions in basic management principles; (2) to serve as an introduction to the problem of manufacturing management; (3) to serve as a focal point for management development discussion of long-range planning and decision assisting tools; (4) to show the student the use of modern electronic computer methods.

Journalism

Sydney J. Goluboff, Coordinator

J 101. Journalism I. Credit, 3 semester hours.

A survey of journalism designed to acquaint students with the profession. The American newspaper as a social institution and a medium of communication. The reporting of public affairs and elementary editing.

J 102. Journalism II. Credit, 3 semester hours.

Prerequisite: J 101.

The basic principles of journalism and the organizational patterns of the mass media. The gathering of journalistic stories and the writing of general, simple, complex, and feature stories.

J 201. News Writing and Reporting. Credit, 3 semester hours.

Prerequisites: J 101, E 113.

The elements of news, the style and the structure of news stories, news gathering methods, copyreading and editing. Practical experience in reporting, writing, and editing.

J 301. Advanced Journalism and Feature Writing. Credit, 3 semester hours.

Prerequisite: J 201.

Theory of copyreading, editing, feature writing, headline writing, and reporting. Practical problems.

Law Enforcement

John R. Conway, Chairman

PA 103. Police Organization and Administration I. Credit, 3 semester hours.

A general study of police organization followed by a detailed study of police administration; includes coordination of all branches of a large police department. An evaluation of line, staff, and auxiliary functions and the interrelationship and interdependence of each. The utilization of planning, analysis, and operations units as administrative aids. Situations calling for maximum police effort are explained along with scientific illustrations.

PA 104. Police Organization and Administration II. Credit, 3 semester hours.

Prerequisite: PA 103.

A detailed study of police organization and procedures within a police department and consideration of the principles of organization and methods adopted by progressive departments to insure effective service to the community.

PA 106. Police Supervision. Credit, 3 semester hours.

Prerequisites: PA 103-104.

Supervisory problems within a police organization and the equating of sound principles of human relations and supervisory techniques to effective police performance. Course includes such topics as discipline, leadership, motivation, conference leadership, instruction, and training as well as a discussion of other tools and devices available to the supervisor in achieving departmental aims and objectives.

PA 201. Introduction to Forensic Science. Credit, 3 semester hours.

Prerequisite: PA 215.

A classroom lecture-discussion session and a practical laboratory period. Forensic Science (Criminalistics): the observation, collection, positive identification, and preservation of physical, chemical, and biological evidence for court presentation. The connection between the evidence found at the crime scene and the identification, apprehension, and conviction of the criminal. Fingerprints, identification of hairs and fibers, chemicals, narcotics, blood, semen, glass, soil and wood. Imprint and impression taking, bullet comparison, document examination, and various photographic methods.

PA 215. Principles of Investigation. Credit, 3 semester hours.

An introduction to criminal investigation in the field. Conduct at the crime scene, interview and interrogation of witnesses and suspects, the use of informants and the techniques of surveillance. The special techniques employed in particular kinds of investigation as well as presentation of the police case in court.

PA 217-218. American Legal System I and II. Credit, 6 semester hours.

The process through which justice is administered. History of the American Legal System. The Constitution of the United States as it applies to police forces. Also, rules of evidence with attention given to judicial notice, presumptions, the nature of real and circumstantial evidence, burden of proof, province of court and jury, documentary evidence, hearsay evidence, confessions, and admissions of witnesses. Particular emphasis will be given to evidence in criminal cases, presumptions of the penal law, the status of illegally obtained evidence, wire tapping, character evidence, proof of other crimes, admission of memorandum book entries, dying declarations, and involuntary confessions.

PA 221. Juvenile Delinquency. Credit, 3 semester hours.

Prequisites: P 111 and SS 113.

A general orientation to the field of delinquency and crime, including all aspects of the social and personal matrix out of which these forms of social destructiveness arise. An attempt is made to build up some consistent theory of causation in order to develop a suitable method of handling these serious problems.

PA 303-304. Forensic Laboratory I and II. Credit, 6 semester hours.

Prerequisites: PA 201, SC 121-22, CH 105-106.

Greater attention given to specific topics and to laboratory testing and identification than in PA 201. In the classroom the laboratory or practical procedures are outlined and discussed. The laboratory work involves testing and identification of evidence, and more detailed procedures are undertaken than in PA 201. An example would be the casting of hairs and fibers for microscopic identification of material as containing a narcotic or blood.

Laboratory Fee: $15.00 per semester.

PA 311. Criminology. Credit, 3 semester hours.

Prerequisites: P 111 and SS 113.

The nature and causation of crime. Approaches to the study of crime, its treatment and prevention. The sociology of criminal law and the nature of criminal behavior; theories and research.

PA 401. Police Problems Seminar. Credit, 3 semester hours.

Prerequisite: Junior or Senior status.

An analysis of major police problems from the viewpoint of both the administrator and the line operations officer. Seeks the integration of established scientific knowledge with practical police experience.

PA 402. Police-Community Relations. Credit, 3 semester hours.

Prerequisites: P 111 and SS 113.

Designed to put the police and the community in a broad theoretical context. Sociological and environmental implications examined. Attention given to police practices which have caused much public hostility and which have isolated law enforcement from the rest of society.

PA 501. Law Enforcement Internship. Credit, 3 semester hours.

Prerequisite: Senior standing and permission of the department chairman.

This program provides monitored field experience with selected federal, state, or local law enforcement agencies subject to academic guidance and review.

Mathematics

Bruce W. Tyndall, Chairman

M 001. Mathematics Review I. No credit. Meets 3 hours per week.

Required of both day and evening students who do not show sufficient understanding of mathematics fundamentals, as determined by entrance examinations. Natural numbers, integers, rationals and irrationals, properties and operations in each, construction and solution of mathematical models using simple equations, and percentages.

M 002. Mathematics Review II. No credit. Meets 3 hours per week.

Prerequisite: M 001 or equivalent.

Continuation of M 001 offered to both day and evening students who do not show sufficient preparation for the standard course in college mathematics. Exponents, polynomials, rational functions, systems of equations, graphs, complex numbers, and quadratic equations.

M 105. Introductory College Mathematics. Credit, 3 semester hours.

Prerequisite: M 002 or Instructor's consent

Cannot be taken for credit by mathematics, physical science or engineering majors. Topics include number systems, functions, trigonometry, and an introduction to probability and statistics.

M 115. Mathematical Analysis I. Credit, 3 semester hours.

Prerequisite: Entrance examination or satisfactory completion of M 002.

Cannot be taken for credit by mathematics and physical science majors.

Designed to offer the foundation needed for the study of calculus. Polynomials, algebraic functions, elementary point geometry, plane analytic trigonometry, and properties of exponential functions.

M 116. Mathematical Analysis II. Credit, 3 semester hours.

Prerequisite: M 115.

Cannot be taken for credit by mathematics, physical science, or engineering majors.

An intuitive approach to topics in functions, analytic geometry, differential and integral calculus, and probability. Designed for an insight into, and appreciation of, the methods of analysis.

M 117. Calculus I. Credit, 3 semester hours.

Prerequisite: M 115 or entrance examination.

The first-year college course for majors in mathematics, science, and engineering; and the basic prerequisite for all advanced mathematics. Introduces differential and integral calculus of functions of one variable, along with plane analytic geometry.

Ms 117. Calculus 1. Credit, 6 semester hours.

Prerequisite: M 002 or entrance examination.

Meets six hours per week and includes topics from M 115.

M 118. Calculus II. Credit, 3 semester hours.

Prerequisite: M 117.

Continuation of first-year calculus, including methods of integration, the fundamental integration theorem, differentiation and integration of transcendental functions, and varied applications.

M 121-122. Algebraic Structures I and II. Credit, 6 semester hours.

Prerequisite: Entrance examination.

A first course in abstract algebra: sets, mappings, operations, relations, elementary logic, number systems, and abstract systems.

M 127. Finite Mathematics. Credit, 6 semester hours.

Prerequisite: M 002 or adviser's consent.

Cannot be taken for credit by mathematics, physical science or engineering majors..

Matrix theory, introduction to linear programming, probability and sets with applications in the social and management sciences.

M 137. Calculus Theory. Credit, 3 semester hours.

Prerequisite: Completion of 2 semesters of calculus at another school, but insufficient entrance examination score to start with M 203.

The theoretical material of the standard first year of calculus, including limits, chain rules, mean value theorems, and a discussion of the fundamental theorem of integral calculus. Upon successful completion, the student is qualified for M 203.

M 203. Calculus III. Credit, 3 semester hours.

Prerequisite: M 118.

The calculus of multiple variables, covering third dimensional topics in analytics, linear algebra, and vector analysis, plus partial differentiation, multiple integration, infinite series, and indeterminate forms.

M 204. Differential Equations. Credit, 3 semester hours.

Prerequisite: M 203.

The solution of ordinary differential equations, including the use of Laplace transforms. Existence of solutions, series solutions, matrix methods, non-linear equations, and varied applications.

M 301. Linear Analysis. Credit, 3 semester hours. Alternates Day and Evening.

Prerequisites: M 203 and M 204.

Vector spaces, infinite series, tensors, eigenvalue theory, transformations, unitary spaces, and an introduction to functional analysis.

M 303. Advanced Calculus I. Credit, 3 semester hours.

Prerequisite: M 204.

Topics covered from infinite series include convergence, tests for convergence, integration and differentiation, asymptotic expansions, and an introduction to real analysis concepts. Topics in complex variables include elementary functions, Cauchy-Riemann equations, Cauchy integral theorem, calculus of residues, integration, and conformal mapping.

M 304. Advanced Calculus II. Credit, 3 semester hours. Offered every other year.

Prerequisite: M 303.

Applied mathematics, including study of the Gamma and Beta functions, Laplace transforms, Legendre polynomials, Bessel functions, product solutions of partial differential equations, and boundary value problems.

M 305. Series Solutions. Credit, 3 semester hours. Offered on demand.

Prerequisite: M 204 and Instructor's consent.

Considers series solutions of ordinary differential equations, including the hypergeometric type, Fourier analysis, introduction to perturbation methods, and successive approximation solutions of non-linear differential equations.

M 309. Advanced Differential Equations. Credit, 3 semester hours. Offered every other year.

Prerequisite: M 204.

Theoretical analysis and applications of non-linear differential equations. Phase plane and space, perturbation theory and techniques, series and related methods, stability theory and techniques, and relaxation phenomena.

M 321-322. Modern Algebra I and II. Credit, 6 semester hours.

Prerequisites: M 122 and M 203.

Groups, rings, integral domains, fields, reals by Dedekind cuts, complex numbers, polynomials, vector spaces, linear transformations, and matrices.

M 325. Number Theory. Credit, 3 semester hours. Offered every other year.

Prerequisite: M 122 or M 118, and Instructor's consent.

Topics are selected from the following: mathematical induction, Euclidean algorithm, integers, number theoretic functions, Euler-Fermat theorems, congruence, quadratic residues, and Peano axioms.

M 331. Linear Algebra. Credit, 3 semester hours.

Prerequisite: M 204.

Linear spaces and systems, matrices, linear transformations and mapping, quadratic forms, spectral theory and decompositions, and an introduction to multilinear products.

M 338-339. Numerical Analysis I and II. Credit, 6 semester hours. Offered every other year.

Prerequisite: M 204.

Approximation and error evaluation. Finite differences, approximation by polynomial and orthogonal series, solutions of ordinary differential equations, solutions of elliptic, parabolic, and hyperbolic partial differential equations, interpolation, and basic integral equation solutions.

M 341. Sets and Ordered Structures. Credit, 3 semester hours. Offered every other year.

Prerequisite: M 331.

Axiomatic set theory based on the Zermelo-Fraenkel theory, algebra of sets, relations and functions, finite and infinite sets, order, axiom of choice and its equivalents.

M 343. Projective Geometry. Credit, 3 semester hours. Offered every other year.

Prerequisites: M 203 and M 331.

Projective transformations, fixed points, invariants, cross-ratio, conics, Euclidean and non-Euclidean geometrics.

M 345. Differential Geometry. Credit, 3 semester hours. Offered every other year.

Prerequisites: M 204 and M 331.

Basic techniques of applied analysis as illustrated with geometry. Tensors, curvature, surface theory, covariant differentiation, Green's & Stoke's type theorems.

M 371. Probability Theory. Credit, 3 semester hours. Alternates Day and Evening.

Prerequisite: M 203.

Axiomatic study of probability: sample spaces, combinatorial analysis, independence and dependence, random variables, distribution functions, moment generating functions, central limit theorem.

M 372. Mathematical Statistics. Credit, 3 semester hours. Offered every other year.

Prerequisites: M 204 plus IE 346 and/or one mathematics course beyond M 204.

Fundamental topics in random variables plus central limit theorem, distribution-free problems, analysis of variance, and an introduction to multivariate distributions.

M 411-412. Real Analysis I and II. Credit, 6 semester hours.

Prerequisites: M 303 and M 322.

Foundations of analysis; sets and functions, limits, operations on sequences, continuous functions on metric spaces, differentiation, Riemann-Stieltjes integral, integration theory, and an introduction to measure theory and the Lebesque integral.

M 423. Complex Variables. Credit, 3 semester hours. Offered every other year.

Prerequisite: M 303.

For mathematics, science, and engineering students.

Review of elementary functions and Euler forms; plus holomorphic functions, Laurent series, singularities, calculus of residues, contour integration, maximum modulus theorem, bilinear and inverse transformations, conformal mapping, and analytic continuation.

M 441. Topology. Credit, 3 semester hours. Offered every other year.

Prerequisite: M 341.

Topics selected from the following: Hausdorff neighborhood relations, derived, open and closed sets, closure, topological space, bases, homeomorphisms, relative topology, product spaces, separation axioms, metric spaces, connectedness and compactness.

Mechanical Engineering

John C. Martin, Chairman

ME 101. Engineering Graphics. Credit, 3 semester hours.

An introduction to the principles and techniques of graphical communication. Fundamentals of orthographic projections; sections; applied geometry; auxiliary views; analysis of point, line, and plane relationships; detail and assembly drawings of simple machine parts.

ME 102. Engineering Drawing and Design. Credit, 3 semester hours.

Prerequisite: ME 101.

For technical students and draftsmen, covering layout of assembly drawings; detailing of their parts, properly dimensioned, for interchangeable manufacture; use of A S A tables of metal fits for machine parts; use of threads and fasteners with the use of tolerances and limits.

ME 124. Mechanical Processes. Credit, 3 semester hours.

Mill and manufacturing processes. The casting of metals, pattern making, and mold preparing. Fabricating, metal cutting, and welding. Demonstrations, laboratory, and inspection trips to local manufacturing plants.

ME 204. Dynamics. Credit, 3 semester hours.

Prerequisites: CE 201 and M 203 (M 203 may be taken concurrently).

Kinematics and dynamics of particles and rigid bodies with emphasis on two dimensional problems. Vector representation of motion in rectangular, polar, and natural coordinates. Impulse-momentum and work-energy theorems. Rigid bodies in translation, rotation and general plane motion.

ME 301. Thermodynamics I. Credit, 3 semester hours.

Prerequisites: PH 210 and M 203.

Classical thermodynamics treatment of first and second laws. Thermal and caloric equations of state. Closed and open systems, and steady flow processes. Absolute temperature, entropy, combined first and second laws. Introduction to statistical thermodynamics: particle distributions, statistical concept of entropy, and relation to macroscopic properties.

ME 302. Thermodynamics II. Credit, 3 semester hours.

Prerequisite: ME 301.

Extensions and applications of first and second laws: availability, combustion processes, phase and chemical equilibrium, ideal gas mixtures, Maxwell's relations. Steam power and refrigeration cycles. Internal combustion engine and gas turbine cycles. Irreversible thermodynamics.

ME 311. Machine Elements. Credit, 3 semester hours.

Prerequisite: CE 202.

Analysis and design of machine elements to meet specified operating conditions. Stresses, deformations and other factors in design of machine parts. Application to machine elements such as joints, shafts, gears, couplings, brakes, clutches, and flexible power-transmitting elements.

ME 312. Mechanical Design. Credit, 3 semester hours.

Prerequisite: ME 311.

Continuation of Machine Elements. Design projects selected individually and developed by the student.

ME 315. Mechanical Engineering Laboratory No. I. Credit, 2 semester hours.

Prerequisites: M 204 and ME 344 (ME 344 may be taken concurrently).

Students conduct selected tests in the fields of Mechanics of Materials and Vibrations. Emphasis placed on organization of the experiment, measurement techniques, sources of error and organization of the report. Students are required to design, conduct, and present one experiment of their own.

Note: Part-time students are charged for a standard 3 semester hour course.

ME 318. Advanced Materials Processing. Credit, 3 semester hours.

Prerequisites: ME 124 and CE 202.

Properties of materials. Forming, grinding, and cutting methods. Analysis of modern methods such as electrolytic grinding, high energy forming, and numerical control of machine tools.

ME 321. Fluid Mechanics. Credit, 3 semester hours.

Prerequisite: ME 204.

Fluid kinematics: continuity equation, vector operations. Momentum equation for frictionless flow: Bernoulli equation with applications. Irrotational flow: velocity potential, Laplace's equation, dynamic pressure and lift. Stream function for incompressible flows. Rotational flows: vorticity, circulation, lift and drag. Integral momentum analysis. Navier Stokes equation: stress tensor, Newtonian fluid. Boundary layer approximations.

ME 322. Introduction to Gas Dynamics. Credit, 3 semester hours.

Prerequisites: ME 321 and ME 302.

Compressible fluid flow with emphasis on one-dimensional ducted steady flows with heat transfer, frictional effects, shock waves and combined effects. Introductory considerations of two and three dimensional flows. Occasional demonstrations will accompany the lectures.

ME 335. Tool Design. Credit, 3 semester hours.

Prerequisites: ME 124 and CE 201.

Basic techniques of tool design, methods analysis, drill jig design, tolerances and allowances, cutting tools, die design, gauges, and fixtures.

ME 336. Tool Engineering. Credit, 3 semester hours.

Prerequisite: ME 335.

A continuation of ME 335 with emphasis on economics, estimating, and process planning. Student design projects requiring the complete planning and designing necessary to manufacture machine parts.

ME 343. Mechanisms. Credit, 3 semester hours.

Prerequisites: ME 204 and M 204.

Graphical and analytical methods for determining displacements, velocities, and accelerations of machine component. Application to simple mechanisms such as linkages, cams, and gear.

ME 344. Mechanics of Vibration. Credit, 3 semester hours.

Prerequisites: ME 204 and M 204.

The mathematical relationships necessary for the solution of problems involving the vibration of lumped and continuous systems; damping; free and forced motion; resonance; isolation; energy methods; balancing; single, two and multiple degrees of freedom; vibration measurement.

ME 401. Mechanical Systems Analysis. Credit, 3 semester hours.

Prerequisites: EE 224 and ME 344.

Dynamical systems and their characteristics. Analogy of electrical, mechanical, and other systems. Mixed systems—Dimensional Analysis—Design considerations.

ME 403. Introduction to Flight Propulsion. Credit, 3 semester hours.

Prerequisites: ME 322 and Instructor's consent.

A senior course designed for those students who intend to work or pursue further studies in the Aerospace field. Among the topics covered are: Detonation and deflagration, introductory one-dimensional non-steady gas flows, basic concepts of turbomachinery and a survey of the contemporary propulsive devices. Shock tubes, supersonic wind tunnel and flame propagation demonstrations will accompany the lectures.

ME 404. Heat and Mass Transfer. Credit, 3 semester hours.

Prerequisite: ME 321.

Conduction in solids, solution of multi-dimensional conduction problems, unsteady conduction, radiation, boundary layer and convection. Introduction to mass transfer. The lectures will include occasional demonstrations of convection, radiation, heat exchangers, etc.

ME 405. Advanced Mechanical Design. Credit, 3 semester hours.

Prerequisites: ME 312 and ME 321.

Selected and advanced topics related to the design of Machine Elements such as hydrodynamic theory of lubrication and principles of hydraulic machines with application to hydraulic couplings.

ME 408. Advanced Dynamics. Credit, 3 semester hours.

Prerequisite: ME 204, M 304 or Instructor's consent.

Plane and spatial motion of particles and rigid bodies, inertia tensor, relative motion, gyroscopes, central force motion, Lagrangian and Hamiltonian Methods.

ME 415. Mechanical Engineering Laboratory No. 2. Credit, 2 semester hours.

Prerequisite: Senior status.

A survey of experiments and laboratory investigations covering the area of Fluid Mechanics, Thermodynamics, Heat Transfer and Gas Dynamics. The students are expected to have the required background in the above-mentioned fields.

Note: Part-time students are charged for a standard 3 semester hour course.

ME 512. Senior Seminar. Credit, 3 semester hours.

Open to Seniors in Mechanical Engineering only.

An independent design, theoretical analysis, or laboratory investigation as chosen by the student and approved by the Chairman of the Department. The work is performed by the student with frequent critiques by the responsible faculty member.

Metallurgy and Materials

John C. Martin, Coordinator

MT 123. Engineering Materials. Credit, 3 semester hours.

The principal engineering materials of modern technology. Physical testing and the evaluation of tests; steels and non-ferrous alloys and their heat treatment; cement, concrete, wood, ceramics, and plastics. Gives engineers sufficient background in these materials to aid them in selecting and setting specifications. Laboratory sessions enable students to witness and perform mechanical tests, heat treatments, hardenability tests, and cold rolling and annealing operations.

MT 219. Physical Metallurgy I. Credit, 3 semester hours.

Prerequisites: CH 105 and PH 108.

Introduction to the relationships between atomic structure and macroscopic properties such as mechanical strength and ductility. Crystallography, phase equilibrium, evaluation of physical tests, and heat treatment are among topics considered.

MT 220. Physical Metallurgy II. Credit, 3 semester hours.

Prerequisite: MT 219.

Further understanding of physical metallurgy with emphasis on crystallography, solidification, heat treatment, and precipitation hardening. Lecture supplemented by laboratory work.

MT 301. Welding Metallurgy. Credit, 3 semester hours.

Prerequisite: MT 220.

Welding and brazing procedures for ferrous and non-ferrous alloys. Demonstrations and examinations of macro and microstructures of welded members. The following processes studied in detail: brazing, metal arc, inert atmosphere, atomic hydrogen, electron beam, laser, and resistance welding.

MT 302. Polymetric Materials. Credit, 3 semester hours.

Prerequisite: MT 219.

Chemistry and physical properties of rubber and plastic materials. Crosslinking, viscoelasticity, glass-transition, and molding methods.

MT 304. Mechanical Behavior of Materials. Credit, 3 semester hours.

Prerequisite: MT 219.

Detailed study of elastic and plastic deformation of materials at room temperature and elevated temperatures. Dislocation theory and microplasticity models.

MT 324. Nuclear Metallurgy. Credit, 3 semester hours.

Prerequisites: MT 219 and PH 315.

Nuclear reactors, production and fabrication of uranium metal and alloys, metallurgy of zirconium, thorium, plutonium, beryllium, liquid metals used in nuclear reactors, fabrication of reactor components, non-destructive materials testing, and the radiation damage of materials.

MT 331. Non-ferrous Metallurgy. Credit, 3 semester hours.

Prerequisite: MT 220.

The physical metallurgy of aluminum, magnesium, copper, nickel, zinc, lead, tin, and their alloys covered by lecture, discussion, and laboratory work. Melting, alloying, casting, extruding, rolling, drawing, and heat treating of the metals with emphasis on the effects of variables and reasons therefor. Typical mill and service difficulties analyzed in the light of the specific fundamental principles involved.

MT 342. Steels and Their Heat Treatment. Credit, 3 semester hours.

Prerequisite: MT 220.

Fundamentals of ferrous physical metallurgy such as the iron-carbon phase diagram, time-temperature-transformation diagrams, hardenability, and the effects of alloying elements. Heat treating discussed in terms of resulting microstructures and physical properties. Practical applications include engineering steels, tool steels, and stainless steels, as well as the requirements of deep drawing low carbon steel.

Music

Ralf E. Carriuolo, Coordinator

MU 101. Introduction to Music. Credit, 3 semester hours.

Some of the basic forms of music and styles of various composers. Music appreciation.

MU 102. The Problems of Music. Credit, 3 semester hours.

Musical aesthetics and its relationship to the composer and his works. The problem of music as an art form in the twentieth century. A continuation of MU 101.

MU 105-106. Chorus. Credit, 1-8 semester hours; maximum per semester, 1 credit.

Open to all students interested in group singing. Students with adequate scholastic standing may carry this course for credit in addition to a normal program. Two hours a week.

MU 131. Introduction to World Music. Credit, 3 semester hours.

Various non-Western musical styles, their cultures and aesthetics; music of the primitive cultures of the Americas and the advanced musics of the Near and Far East; emphasis on India, the Orient, Southeast Asia, and Indonesia.

Offered Fall semester only, in alternate years.

MU 132. Introduction to American Music. Credit, 3 semester hours.

Music of the North American continent from the Puritans to the present day; both European and non-European musical traditions, with emphasis on 20th-century development in and out of the concert hall.

Offered Spring semester only, in alternate years.

MU 150. Introduction to Music Theory. Credit, 3 semester hours.

A basic introduction to the fundamentals of music: physical and acoustical foundations; harmony and melody; modality, tonality, atonality; consonance, dissonance, tension; some introductory composition in choral and contrapuntal styles.

Offered Fall semester only, in alternate years.

MU 201. Music Analysis and History. Credit, 3 semester hours.

Prerequisite: Must have basic reading ability in musical notation.

The growth of Western music to 1850. Analysis of musical masterpieces on a technical and conceptual basis.

MU 202. The Development of Contemporary Music. Credit, 3 semester hours.

Prerequisite: Must have basic reading ability in musical notation.

A continuation of MU 201, from 1850 to the present day. The medium of music as a structural and an emotional tool. Analysis of contemporary theories and compositions.

Philosophy

John Collinson, Dean, Arts and Sciences

PHL 111. Introduction to Problems of Philosophy. Credit, 3 semester hours.

Man's place in the universe, how we discover truth, the nature of beauty and the good, the basis of moral choices, etc.

PHL 113. History of Philosophy through the Renaissance. Credit, 3 semester hours.

Chronological introduction to problems of philosophy. Pre-Socratics, Plato, Aristotle, Medieval and Renaissance philosophers.

PHL 114. History of Modern Philosophy. Credit, 3 semester hours.

Chronological introduction to problems of philosophy. Seventeenth Century to the present, including Descartes, Hume, Hegel, Nietzsche, and contemporary philosophers.

PHL 124. Logic and Scientific Method. Credit, 3 semester hours.

Introduces the student to deduction, warranted induction, and scientific description.

PHL 213. Contemporary Issues in Philosophy. Credit, 3-6 semester hours.

Content varies with the interest of the instructor and the students. Current philosophical thinking in such areas as natural science, social science, metaphysics, religion, aesthetics, theory of knowledge, language, existentialism, ethics, and positivism.

PHL 222. Ethics in a Changing Society. Credit, 3 semester hours.

Prerequisite: PHL 111 or 113.

The major ethical systems in the framework of contemporary society. Ethical norms which point to goals of life and their relation to the issues in science, business, the professions, and other human activities.

PHL 225. Symbolic Logic. Credit, 3 semester hours.

Prerequisite: PHL 124 or M 121.

Formal deductive systems, including the propositional calculus, the calculus of functions, independence of axioms, primitive symbols, interpretation, paradoxes, theory of types, Goedel's theorem.

PHL 240. Philosophy of Science. Credit, 3 semester hours.

Prerequisite: PHL 111.

A study of the nature of scientific method, the logic of scientific explanation and theory construction, philosophical problems of selected sciences, and questions peculiar to the social sciences.

PHL 250. Philosophy of Religion. Credit, 3 semester hours.

Prerequisite: PHL 111.

An examination of some philosophical notions used in religious discourse; meaning truth, fact, being, logic, etc.

PHL 322. Analysis and Criticism of the Arts. Credit, 3 semester hours.

Prerequisite: At least 3 semester hours of Philosophy.

The language used to talk about works of art. Form, content, expression, values, the ontological status of the art object.

PHL 340. History and Philosophy of Education. Credit, 3 semester hours.

Prerequisite: 3 semester hours in Philosophy.

A chronological treatment of philosophical ideas that influence contemporary education; how these ideas affect the day-to-day work of the teacher.

Physical Education

Donald Wynschenk, Coordinator of Physical Education

PE 111-112. Physical Education (men). No credit.

The basic fundamentals and skills of carry-over sports such as tennis, golf, touch football, handball, bowling, skating, swimming, softball, badminton, and squash. Understanding and development of skills in spectator team sports such as basketball, soccer, volleyball, and softball. Calisthenics and adapative exercise program.

PE 113-114. Physical Education (women). No credit.

The basic fundamentals and skills of carry-over sports such as tennis, golf, touch football, handball, bowling, skating, swimming, softball, badminton, and squash. Understanding and development of skills in spectator team sports such as basketball, soccer, volleyball, and softball. Calisthenics and adapative exercise program.

PE 221-222. Personal Hygiene. No credit.

Required of all day freshmen who are exempt from PE 111-112 or PE 113-114. Personal aspects of hygiene, dealing with the principles of healthful living, mental attitude, diet, and the value of systematic exercise.

Physics

Irwin S. Boak, Chairman

PH 103-104. General Physics. Credit, 6 semester hours.

Cannot be taken for credit by students majoring in chemistry, physics or engineering.

Basic concepts of classical and modern physics such as fundamental laws and phenomena of mechanics, electricity, magnetism, heat, and optics. Conservation principles, relativity and quantum theory, atomic, nuclear, and solid state physics, geophysics, astrophysics, biophysics, laser and lunar science.

PH 105-106. General Physics Laboratory. Credit, 2 semester hours.

May be elected concurrently with PH 103-104.

Laboratory Fee: $15.00 per semester.

PH 108. Physics I w/Lab. Credit, 3 semester hours.

Prerequisite: M 117 or Instructor's consent.

Fundamental concepts and mathematical exposition, including calculus, of mechanics, statics, kinematics, Newton's laws, work, energy, power, conservation of energy and momentum, rotational concepts, simple harmonic motion.

Laboratory Fee: $15.00.

PH 203. Techniques in Nuclear Physics. Credit, 2 semester hours.

Prerequisites: Two semesters of a laboratory science and Instructor's consent.

The instruments and methods of nuclear physics. Experiments may be completed in biology, chemistry, engineering or physics, according to the interest of the student.

PH 209. Physics II w/Lab. Credit, 3 semester hours.

Prerequisites: PH 108, M 118.

Fundamental concepts and mathematical exposition, including calculus, of electricity and magnetism, electrostatics, direct currents, magnetic effects of a current, electrical instruments, ballistic galvanometer, induced E.M.F., inductance and capacitance, simple harmonic motion, physical basis for A.C. circuits, bridge measurements, potentiometer measurements.

Laboratory Fee: $15.00

PH 210. Physics III w/Lab. Credit, 3 semester hours.

Prerequisites: PH 108 and M 118.

Fundamental radiation topics include heat, sound, light; simple harmonic motion, generation of mathematical wave forms, wave propagation, laser demonstration of optical principles, lens systems, theory of color, wave interference, gratings, prisms, filters, spectroscopy.

Laboratory Fee: $15.00.

PH 211. Physics IV. Credit, 3 semester hours.

Prerequisite: PH 210.

Modern physics fundamentals. Twentieth-century developments in physics. Special relativity, quantum theory of radiation, DeBroglie waves, the Bohr atom, elementary wave mechanics, the solid state, crystal structure, semiconductors, and lasers.

PH 301. Analytical Mechanics. Credit, 3 semester hours.

Prerequisites: M 204, PH 108, or Instructor's consent.

Intermediate analytical mechanics. Statics and dynamics of particles and rigid body with emphasis on the theory of motion under central forces and on the use of the generalized coordinates; introduction to an elementary Lagrangian and Hamiltonian formalism; small vibrations.

PH 315. Nuclear Physics. Credit, 3 semester hours.

Prerequisite: PH 211 or Instructor's consent.

Elementary nuclear physics. Nuclear structure, natural radioactivity, induced radioactivity, nuclear forces, and reactions, fission and fusion, reactors, and topics of special interest.

PH 340. Lasers. Credit, 2 semester hours.

Prerequisite: PH 210 or Instructor's consent.

Laser theory, construction and application to latest engineering and scientific uses.

PH 351-352. Intermediate Electricity and Magnetism. Credit, 6 semester hours.

Prerequisites: PH 209 and M 204.

Electric field, potential, Gausse Law, dipoles, poissions, and LaPlace equations, dialectric theory, steady magnetic fields, electromagnetic induction, magnetic properties of matter, Maxwell equations, L-C-R circuits, A.C. circuit analysis, vacuum tube and transistor circuit theory.

PH 361. Modern Optics. Credit, 3 semester hours.

Prerequisite: PH 210.

Solid state spectroscopy from the point of view of the research physicist and chemist. Modern optical devices including television pick-up tubes, electro- and inspection-luminescent devices, image amplifiers, lasers and holography, fiber-optics, opto-electronics for computers.

PH 371. Advanced Laboratory I. Credit, 2 semester hours.

Prerequisite: PH 209.

Application of electrical and magnetic theory to ballistic galvanometer, cathode ray oscilloscope, current balance, oscillators, amplifiers, transistor and vacuum tube circuits, design of laboratory measuring equipment. Two 3-hour laboratory periods weekly.

Laboratory Fee: $15.00.

PH 372. Advanced Laboratory II. Credit, 2 semester hours.

Prerequisite: PH 210.

Selected experiments in optics including lasers (construction and applications), interferometry and spectrometry.

Laboratory Fee: $15.00.

PH 373. Advanced Laboratory III. Credit, 2 semester hours.

Prerequisite: PH 211.

Selected experiments in atomic and nuclear physics including nuclear radiation and decay, quantization of charge and light energy, and nuclear magnetic resonance.

Laboratory Fee: $15.00.

PH 400. Statistical Mechanics. Credit, 3 semester hours.
Prerequisite: Instructor's consent.

An introductory course in classical and quantum statistical mechanics. The canonical ensemble; Maxwell-Boltzmann, Bose-Einstein, and Fermi-Dirac statistics and their applications; statistical interpretation of thermodynamics; transport processes.

PH 401. Atomic Physics. Credit, 3 semester hours.
Prerequisite: PH 211.

Structure and interactions of atomic systems including Schrodinger's equation, atomic bonding, scattering and mean free path, radiative transitions, and laser theory.

PH 404. Senior Project. Credit, 1-6 semester hours.

Open only to senior Physics Majors. Individual projects in experimental or theoretical physics to be carried out under direct supervision of a faculty advisor.

PH 406. Solid State Physics. Credit, 3 semester hours.
Prerequisite: PH 211.

Elementary principles of the electrical behavior of solids as applied to semiconductors, metallurgy, and magnetically activated solid state devices.

PH 451. Elementary Quantum Mechanics. Credit, 3 semester hours.
Prerequisite: PH 211 or Instructor's consent.

An elementary treatment of nonrelativistic quantum mechanics. Schrodinger's equation with its applications to atomic and nuclear structure; collision theory; radiation; introductory perturbation theory.

PH 452. Thermodynamics. Credit, 3 semester hours.
Prerequisites: PH 108 and Instructor's consent.

An introduction to thermodynamics and kinetic theory. Laws of thermodynamics, entropy, application to simple physical and chemical systems; thermodynamic inequalities and equilibrium; phase transitions; properties of ideal gases; low temperature physics.

PH 470. Theory of Relativity. Credit, 3 semester hours.
Prerequisite: Instructor's consent.

Introductory course on Einstein's theory of Relativity. Special theory of relativity including the Lorentz Transformation, Minkowsky geometry, relativistic mechanics and electromagetism. General theory of relativity including principle of equivalence, Einstein's theory of gravitation, graviton.

Political Science

Phillip S. Kaplan, Chairman

PS 121. American Government. Credit, 3 semester hours.

The structure and functions of the national government, party organization, national and state relations, and American politics as compared to those of other countries and the trends in modern politics.

PS 122. State and Local Government. Credit, 3 semester hours.
Prerequisite: PS 121.

The structure and functions of state and local governments in the United States.

PS 216. Municipal Government. Credit, 3 semester hours.
Prerequisite: PS 122.

Intensive study of selected problems of structure, organization, and powers of local government; intergovernmental relationships; administrative and personnel management; special application to Connecticut.

PS 221. Introduction to International Relations. Credit, 3 semester hours.
May be taken in place of PS 122.

Trends of contemporary international politics, the foreign policy process, selected substantive issues of foreign policy. The East-West confrontation, including a short history of the "cold war" and the current state of its major protagonists and their alliance systems. The "emerging countries," Western European integration, and the United Nations.

PS 302. The U.S. Constitution. Credit, 3 semester hours.
Prerequisite: PS 121.

Principles and concepts of the Constitution as revealed in leading decisions of courts. Concepts and principles of judicial review, federalism, separation of powers, implied powers, due process of law, equal protection, the contract clause, etc.

PS 304. Political Parties. Credit, 3 semester hours.
Prerequisite: PS 121.

An historical and functional analysis of American political parties, including a study of interest groups, public opinion, electoral devices, political leaders, and proposals for the reorganization of the existing party structure.

PS 305. Urban Government and Politics. Credit, 3 semester hours.
Prerequisites: PS 121-122 and Instructor's consent.

The development of city politics in relation to social and economic change: issues of planning, urban renewal, racial conflict and transportation problems.

PS 308. Legislative Process and Procedure. Credit, 3 semester hours.
Prerequisites: PS 121-122 and Instructor's consent.

The role of legislatures in modern American government; the relation of electors and apportionment to law-making process; the veto power; the committe system, seniority rules, constitutional limitations; a comparison of the legislative process in the United States with major European powers.

PS 401. Political Theory, Ancient and Medieval. Credit, 3 semester hours.
Prerequisite: HS 111.

Western political thought from Plato to Sir Thomas More. Emphasis upon the basic concepts and persistent questions of political theory and their relevance to contemporary problems through systematic analyses of major works.

PS 402. Political Theory Modern and Contemporary. Credit, 3 semester hours.
Prerequisite: HS 112.

Continuation of PS 401. Hobbes to the present.

PS 416. Senior Seminar in Political Science. Credit, 3 semester hours.
Prerequisite: Required of all liberal arts majors in Political Science.
The undertaking of independent study and a research project presented in oral and written form.

Psychology

David Brown, Chairman

P 111. Psychology. Credit, 3 semester hours.

Important principles of human behavior. Motivation, emotion, learning, personality, intelligence, etc. The utilization of psychological knowledge in relation to everyday human activities.

P 212. Business and Industrial Psychology. Credit, 3 semester hours.
Prerequisite: P 111.

Psychological principles and research findings pertinent to administration in business and industry. Contemporary research of behavior factors in managerial contexts.
Laboratory Fee: $15.00.

P 216. Developmental Psychology. Credit, 3 semester hours.
Prerequisite: P 111.

Processes of development of the child, adolescent and adult, motivation changes in interests, attitudes, and abilities, social and cultural influences.

P 301. Statistics for Behavioral Sciences. Credit, 3 semester hours.
Prerequisite: 3 semester hours of mathematics at the college level.

Consideration of statistical concepts pertinent to the behavioral sciences. Application of statistical techniques to experimental design and research findings. Required of Psychology majors.

P 305. Research Design and Methods in Psychology I. Credit, 3 semester hours.

Prerequisites: P 111 and P 301.

Methods of design and analysis in psychological research. Consideration of psychophysical methods, general variables, design problems, problems of inference. Required of Psychology majors.

P 306. Research Design and Methods in Psychology II. Credit, 3 semester hours.

Prerequisite: P 305.

Methods of design and analysis in perception, learning, motivation, concept-formation, etc. Group and individual research projects.

P 315. Psychology of Learning. Credit, 3 semester hours.

Prerequisites: P 111 and P 216.

Psychological principles underlying learning and teaching. Learning theories and their application to behavioral change.

P 321. Social Psychology. Credit, 3 semester hours.

Prerequisites: P 111 and SS 113.

The interdependence of social organizations and behavior. The interrelationships between role systems and personality; attitude analysis, development and modification; group interaction analysis; social conformity; social class and human behavior.

P 336. Abnormal Psychology. Credit, 3 semester hours.

Prerequisite: P 111.

Psychological and organic factors involved in personality disorganization. The psychodynamics and classification of psychoses, neuroses, brain disorders, personality disorders, psychophysiological disorders, transient stress disorders, and mental retardation.

P 341. Psychological Theory I. Credit, 3 semester hours.

Prerequisites: P 305 and senior class status.

The historical background of contemporary issues in modern psychological schools. Required of Psychology majors.

P 342. Psychological Theory II. Credit, 3 semester hours.

Prerequisite: P 341.

Continuation of Psychological Theory I. Emphasis placed on contemporary problems of psychology in the light of twentieth century developments in theory. Required of Psychology majors.

P 350. Theory and Principles of Psychological Measurement. Credit, 3 semester hours.

Prerequisite: P 301.

The bases for constructing and evaluating standardized tests in psychological, educational and industrial applications.

P 361. Physiological Psychology. Credit, 3 semester hours.

Prerequisites: P 111 and SC 121-122.

Endocrinological, neural, sensory and response mechanisms involved in learning, motivation, adjustment, emotion, and sensation.

P 370. Psychology of Personality. Credit, 3 semester hours.

Prerequisites: P 216 and P 315.

Major personality theories and their implications for understanding both normal and deviant personality developments.

Public Administration

Jay M. Etlinger, Chairman

SA 211. Principles of Public Administration. Credit, 3 semester hours.

Prerequisites: PS 121 and PS 122 or PS 216.

The development, organization, functions, and problems of national, state, and local administration.

See Business Administration for further courses in the general area.

Science and Biology

H. Fessenden Wright, Chairman

SC 111-112. Physical Science. Credit, 6 semester hours.

Science and its relation to other areas of learning and to daily living. Development and unity of physical science as a field of knowledge. Subject material includes astronomy, physics, chemistry, and geology.

SC 121-122. Biology. Credit, 6 semester hours.

A survey of the members of the three biological kingdoms; the basic concepts of cellular structure and function. Comparison of the anatomy and physiology of representative members of the protist, the plant, and the animal kingdoms. Major emphasis placed on the human organism. Students introduced to each of the major subdivisions of biology.

SC 123. Human Biology. Credit, 3 semester hours.

Prerequisite: SC 121.

A condensed study of Human Anatomy and Physiology with some aspects of nutrition and disease included. Designed to replace SC 122 for those majoring in Psychology, Sociology and Social Services. For laboratory credit, where needed, SC 132 may be taken concurrently or, with permission, after completing course work.

SC 131-132. Biology Laboratory. Credit, 2 semester hours.

The microscopic examination of cells and tissues and the dissection of various organisms from the earthworm to the fetal pig.

Laboratory Fee: $15.00 per semester.

SC 135. Earth Science. Credit, 3 semester hours.

Those areas of science dealing with the earth and its environment. Includes elementary aspects of geology, oceanography, and meteorology.

SC 201. Genetics. Credit, 3 semester hours.

Prerequisites: SC 122, SC 251, or SC 252.

Mendelian genetics and developments that have produced the modern concept of inheritance; the role of DNA and theories of the chemical basis of heredity.

SC 202. Genetics Laboratory. Credit, 3 semester hours.

Prerequisite: SC 201.

Theory and techniques using flies, yeasts, bacteria, and viruses to illustrate the classical genetic theories. An introduction to biometrics is presented.

Laboratory Fee: $15.00.

SC 211-212. Human Anatomy and Physiology. Credit, 6 semester hours.

Prerequisites: SC 122 and SC 132 or SC 251.

The essentials of human anatomy and physiology. Systems studied one at a time, taking up the anatomical features first and then the physiological functions. Both normal and pathological conditions discussed whenever possible.

SC 213-214. Human Anatomy and Physiology Laboratory. Credit, 2 semester hours.

Prerequisites: SC 122 and SC 132 or SC 251.

For those who need laboratory and are taking SC 208 or SC 211-212. Examination of organs and organ stystems, using plastic models, slides of cells and tissues, human bones and dissection of preserved mammalian organs (cow's eye, sheep's brain). Transparancies and film loops used as supplemental material.

Laboratory Fee: $15.00 per semester.

SC 221. Evolution. Credit, 3 semester hours.

Prerequisite: SC 122.

Biochemical and organic evolution studied. Physical anthropology and paleontology introduced, and the relationship of evolution to genetics and ecology.

SC 222. Ecology. Credit, 3 semester hours.
Prerequisites: SC 122, SC 251 or SC 252.

The interaction of living things, with an emphasis on man, with each other and with their environment. Includes discussion of existence, food, reproduction, populations, migration, distribution, succession, rhythms, communities, adaptions and application.

SC 223. Entomology w/Lab. Credit, 4 semester hours.
Prerequisites: SC 122 and SC 132 or SC 251.

Study of classification, evolution, anatomy, development, ecology, life-cycle, genetics, and systematics of insects, arachnoids, and myriapods. Consideration of insects as major competitors of man, as disease carriers and of their influences on history and culture. Examples of fundamental biological principles as related to insects are discussed. Insect culture, observation, and dissection are carried out in laboratory.

Laboratory Fee: $15.00.

SC 251. Zoology w/Lab. Credit, 4 semester hours.
Prerequisites: SC 121 and SC 131 or Biology major.

The general morphology and phsysiology of animals from the amoeba to man, taken phylum by phylum. Dissection of representative animals from the major phyla, special emphasis on the Phyla Invertebrata.

Laboratory Fee: $15.00.

SC 252. Botany w/Lab. Credit, 4 semester hours.
Prerequisites: SC 121 and SC 131 or Biology major.

The comparative structure, function, habitat, and evolutionary relationships of plants, techniques of plant identification and classification. Field trips conducted when possible.

Laboratory Fee: $15.00.

SC 261-262. Biochemistry w/Lab. Credit, 8 semester hours.
Prerequisites: CH 105-106.

First term deals with medicinal and bio-organic chemistry. The study of molecular structure and functional groups, their reactions and relationship to physcal and physiological properties. Second term concentrates on amino acids, proteins, carbohydrates, enzymes, coenzymes, vitamins, nucleic acids, lipids, and alkaloids and their catabolism and anabolism.

Laboratory: preparation, separation, purification techniques, reaction tests, and enzyme reactions and rates.

Laboratory Fee: $15.00 per semester.

SC 301. Microbiology w/Lab. Credit, 4 semester hours.
Prerequisites: SC 122 and SC 132 or SC 251-252, SC 261-262, and CH 103.

A history of microbiology and a survey of microbial life. Bacteria as characteristic prototypes of all microorganisms; the environment, growth, reproduction, metabolism, and relationship to man of microorganisms.

Laboratory Fee: $15.00.

SC 302. Bacteriology w/Lab. Credit, 4 semester hours.
Prerequisite: SC 301.

Theoretical and laboratory study of the morphology, physiology, and classification of bacteria and other microorganisms. The application of these facts to agriculture, industry, sanitation, public health, and disease.

Laboratory Fee: $15.00.

SC 307. Comparative Vertebrate Anatomy w/Lab. Credit, 4 semester hours.
Prerequisite: SC 251.

The structure, origin, and evolutionary history of the vertebrate organ systems. In the laboratory, representative species of each vertebrate class dissected, with attention given to the individual organ systems.

Laboratory Fee: $15.00.

SC 308. General Physiology w/Lab. Credit, 4 semester hours.
Prerequisites: SC 251-252, CH 105-106, and PH 103-104.

Basic theories of physiology as applied to plants and animals. Practical aspects and experimental techniques studied in the laboratory.

Laboratory Fee: $15.00.

SC 309. Plant Morphology and Taxonomy w/Lab. Credit, 4 semester hours.

Prerequisite: SC 252.

Comparative plant structure and reproduction, particularly as related to the classification of plants. Laboratory parallels the classroom, involving examination of microscopic slides, models, preserved specimens, and gross structures of dissected materials.

Laboratory Fee: $15.00.

SC 311. Phycology and Mycology w/Lab. Credit, 4 semester hours.

Prerequisites: SC 251 and SC 252.

Fresh-water and certain marine algae and the various types of fungi. Structure, physiology, life-cycles, reproduction, nutrition, ecology, their function as disease producers.

Laboratory Fee: $15.00.

SC 331. Animal Behavior. Credit, 3 semester hours.

Prerequisites: SC 122 and P 111.

Behavioral patterns of animals studied on a comparative basis. Laws and principles of ethology related to genetics, psychology, ecology, evolution, physiology, and social structure.

SC 341-342. Advanced Biochemistry. Credit, 6 semester hours.

Prerequisites: SC 122 and SC 252.

Enzymology and the more important metabolic pathways, including those of alkaloid synthesis.

SC 401. Embryology w/Lab. Credit, 4 semester hours.

Prerequisites: SC 201, SC 262 and SC 307.

Origin and development of tissues, organs, and organ-systems during the embryonic and post-embryonic stages. Comparisons between higher invertebrates and the vertebrate organisms. In the laboratory the chick grown and studied at various stages. Audio-visual teaching methods also used.

Laboratory Fee: $15.00.

SC 402. Cytology w/Lab. Credit, 4 semester hours.

Prerequisites: SC 262, SC 301 and SC 308.

Structure and basic concepts of cellular and tissue function on the molecular, sub-cellular and cellular level, problems and techniques of cellular biology. Tissue culture techniques in laboratory. The microscope and audio-visual equipment also employed.

Laboratory Fee: $15.00.

SC 403. Histology w/Lab. Credit, 4 semester hours.

Prerequisites: SC 251, SC 262 and SC 301.

Microscopic and chemical structure of organs and tissues and their cell constituents. Microscopic observations, tissue staining and slide preparation.

Laboratory Fee: $15.00.

SC 404. Parasitology w/Lab. Credit, 4 semester hours.

Prerequisites: SC 251 and SC 252 or SC 301.

Morphology, life-history, physiology, and economic importance of the most common parasites of plants and animals. Microscopic and gross examinations supplemented with audio-visual illustrations.

Laboratory Fee: $15.00.

SC 405. Pathology w/Lab. Credit, 4 semester hours.

Prerequisites: SC 208 or SC 212; SC 251 and SC 301.

Causes, symptoms, progress, effect and control of diseases of animals, primarily man. Laboratory observation of diseased cells, tissues, and organs will be conducted partly at New Haven College and partly at St. Raphael's Hospital.

Laboratory Fee: $15.00.

SC 406. Neuro-endocrine Physiology. Credit, 3 semester hours.

Prerequisites: SC 112 or CH 103; SC 208 or SC 212 and P 111.

Morphology and physiology of the neurological and endocrine systems as related to the control of body functions. Relationship to behavior with examples from psychobilology and ethology.

SC 407. Fresh Water and Marine Biology. Credit, 3 semester hours.

Prerequisites: SC 251, SC 252 and SC 222.

Aquatic organisms, their life-cycles, and their ecological factors. Causes of pollution when equilibria are upset.

SC 415-416. Biophysics w/Lab. Credit, 8 semester hours.

Prerequisites: SC 262, SC 308 and PH 104.

Principles and properties of large and small molecules in solutions, particularly in body fluids. Physical laws and theories relating to the action of the sense organs, nerves, muscles, and other physiological phenomena. Practical applications are studied or demonstrated in the laboratory.

Laboratory Fee:$15.00 per semester

SC 417-418. Bio-Techniques. Credit, 8 semester hours.

Prerequisites: SC 262, SC 301 and SC 308.

Clinical and research techniques used in the biological sciences. Advanced microscopy, cell and tissue culturation, clinical techniques and instrumental procedures.

Laboratory Fee:$15.00 per semester

SC 419. Pharmacology w/Lab. Credit, 4 semester hours.

Prerequisites: SC 122 and SC 132; or SC 251-252; SC 262 or CH 302.

Science of medicinals and other chemicals and their effects produced by use and abuse on living organisms, the mechanisms whereby these effects are produced. Relation of structure to activity methods of assay, and metabolic pathways involved.

Laboratory Fee: $15.00.

SC 421. Toxicology w/Lab. Credit, 4 semester hours.

Prerequisites: SC 122 and SC 132, or SC 251-252; SC 262.

The action of chemicals, particularly poisons, on living organisms. Relation of structure to activity, mechanisms of detoxication (in vivo), and reason for activity studied. Methods of isolation, identification and characterization from tissues, toxic limits, methods of assay, types of antidotes used.

Laboratory Fee: $15.00.

SC 491-492. Seminar and Senior Thesis. Credit, 2 semester hours.

Prerequisites: Biology major and completion of Biology core requirements.

Hourly weekly meetings during which prepared papers are read by members of the class. Each student, with his adviser, must select a topic which from library sources is developed into a "Library Thesis." The contents of this thesis must be defended before department faculty members.

SC 495-496. Senior Research. Credit, 4 semester hours.

Prerequisites: Biology major, Honor student. By permission of the department.

Choice of a research topic, literature search, planning of experiments, experimentation, and correlation of results in a written report, under the guidance of a department faculty member.

Laboratory Fee: $15.00 per semester.

Sociology and Social Services

Chairman: To be Announced

Peter T. Van Suetendael, Coordinator of Social Services

SS 113. Sociology. Credit, 3 semester hours.

The role of culture in society, the person, and personality; groups and group behavior; institutions; social interaction and social change.

SS 114. Problems in Sociology. Credit, 3 semester hours.

Prerequisite: SS 113.

The major problems which confront the present social order, and the methods now in practice or being considered for dealing with these problems.

SS 221. Cultural Anthropology. Credit, 3 semester hours.

Prerequisite: SS 113.

A systematic survey of the customs of man found in preliterate societies as well as modern societies. A study of the evolution of culture and analyses of religion, economics, language, kinship, art, etc. as found in primitive and modern cultures.

SS 301-302. Social Administration I and II. Credit, 6 semester hours.

Prerequisites: SA 211 and SS 113.

Welfare legislation, counseling in social administration, criminology, fields of social work, introduction to public welfare, introduction to case work, sociology of minority relations, child welfare problems, juvenile delinquency, group dynamics, methods of social research, introductory social statistics, sociology of the family, sociology of industry, population problems, problems of an aging population, problems of redevelopment, and urban renewal.

SS 312. Marriage-Family as a Sociological Institution. Credit, 3 semester hours.

Prerequisite: SS 113.

The structure and function of the family in American Society: analysis of social relations within the institution, factors contributing to its successful functioning, and those leading to alienation and social disorganization.

SS 331. Population Problems and Human Ecology. Credit, 3 semester hours.

Prerequisites: SS 113 and SS 221.

A sociological approach to social demography with attention given to population statistics found in U. S. Census reports and vital statistics reports. The quantitative patterns of distribution of population, and population changes and trends.

SS 400. Minority Group Relations. Credit, 3 semester hours.

Prerequisites: SS 113 and PA 218.

An interdisciplinary survey of minority groups in this country with particular attention paid to those ethnic, religious, and racial factors that influence interaction. Designed to promote an understanding of sub-group cultures.

SS 410. Urban Sociology. Credit, 3 semester hours.

Prerequisite: SS 113.

The problems of the cities. Residential patterns together with the physical development of cities and redevelopment plans. An examination of groups of people and their environment and the relationship between the two.

SS 413. Foundations of Sociological Theory. Credit, 3 semester hours.

Prerequisites: SS 113, SS 221 and SS 321.

An anlysis of the development of sociology in the nineteenth century with particular emphasis on the theories of Conte, Durkheim, Simmel, Weber, Marx, de Tocqueville, and others.

SS 420. Community Problems. Credit, 3 semester hours.

Prerequisite: SS 410.

The students in this course will have an opportunity to familiarize themselves with one or more agencies in the community. They will become acquainted with the problems in the community confronting the agencies and will be asked to determine ways of dealing with these problems. The seminar method will be used.

SS 430. Special Welfare Legislation, Past, Present and Future. Credit, 3 semester hours.
Prerequisites: SA 301 and SA 302.

The course traces the history of man's efforts to assist others from early times to the present. The effects of the past are pointed out in the present welfare system. Welfare laws both past and present are examined. The student is made aware of the resources available for assistance as well as the reasons for the existence of these resources.

SS 440. Undergraduate Seminar. Credit, 3 semester hours.
Prerequisite: 21 semester hours in Sociology.

Open to Sociology major candidates by special permission of the department chairman. A detailed examination of selected topics in the field of sociology and a critical analysis of pertinent theories with emphasis on modern social thought.

SS 501-502. Internship. Credit, 3 semester hours.

Prerequisites or to be taken concurrently: SA 211 and SA 301-302.
Registration only by permission of the Department Coordinator of Social Services.

A seminar for Social Services majors. The program is in conjunction with social agencies in the area. The student engages in actual field experience in the area of his major field of interest. Seminars in conjunction with this experience provide an opportunity for an understanding of group and individual dynamics.

SS 512. Research Seminar. Credit, 3 semester hours.
Prerequisites: BA 216 Statistics.

The student develops and carries out an original research project in social science, reporting his procedure to the class.

Theater Arts

Carroll P. Cole, Coordinator

T 131-132. Introduction to the Theater. Credit, 6 semester hours.

Using the theater resources of the New Haven area, students will study topics such as playwriting, directing, acting, set design, dramatic criticism. Students must pay theater admissions.

T 141-142. World Drama and Theater. Credit, 6 semester hours.

Dramatic literature from classical times to the present, considered in its contemporary theatrical setting.

T 341-342. Acting and Directing. Credit, 6 semester hours.

Exercises in acting and directing, moving from the elementary to the complex. Emphasis on acting during the first semester and directing during the second. The student may participate in major workshop productions.

T 491-492. Theater Arts Seminar. Credit, 6 semester hours.

Prerequisites: T 131-132, T 141-142, T 341-342 or Instructor's consent.

Independent study in special areas of drama: theater history, dramatic literature, criticism, playwriting, directing, acting.

School of Graduate Studies

Phillip S. Kaplan, Dean

Accounting

A 621. Managerial Accounting. Credit, 3 semester hours.

Accounting as a general information system for economic activities. The relation of accounting with other social sciences. Accounting data output as a basis for business decisions.

The accounting cycle, including source data production, collection, compilation, report production, and interpretation of financial statements. Price level impact, cash and fund flow, cost control, short and long-term (capital) budgeting (condensed), computer applications, and link-up with operations research.

A 661. Managerial Accounting Seminar. Credit, 3 semester hours.

Prerequisites: A 621 or 6 or more credits in accounting.

Audited financial statements. Trends in presentation. Accountign principles: the AICPA Board, the SBC and U. S. Treasury Department as "co-authors" of principles and mandatory disclosure requirements. Concepts of branch operations, mergers, consolidation, and conglomerates. Divisive reorganizations: split-up, and spin-off.

Accountng dilemma for international operations. Management accounting concepts versus financial and tax accounting. Impact of high-speed. multi-media data processing on management accounting functions. Management control concepts. Management by exception, use of cost accounting in budgeting, business decisions and budgeting, and capital expenditures.

Business Administration

BA 609. Marketing. Credit, 3 semester hours.

An intensive study of modern marketing methods and concepts for the student who has not had undergraduate work in marketing. Includes a review of marketing fundamentals, a study of the decision-making problems encountered by the marketing executive, and the relation of marketing to environmental forces.

BA 615. Finance. Credit, 3 semester hours.

A study of business corporations in their modern setting. A survey of historical development followed by promotional functions, description and evaluation of corporate financial instruments, capitalization, corporate management, sale and regulation of corporate securities, income and working capital, corporate expansion, failure and reorganization.

BA 633. Managerial Economics. Credit, 3 semester hours.

A study of the application of the major tools of economic analysis to the problems encountered by management in the organization and operation of the firm. Topics include the theory and measurement of consumer demand, measurement and control of costs, the effects of public policy upon managerial decisions. and pricing techniques and the allocation of capital within the firm.

BA 635. Thesis Seminar I. Credit, 3 semester hours.

Periodic lectures and discussions on advanced topics in the field of management. Critique of the individual student's progress in the preparation of a thesis.

BA 636. Thesis Seminar II. Credit, 3 semester hours.

A continuation of the first semester.

BA 637. Seminar in Management Theory. Credit, 3 semester hours.

A survey of the literature of management theory. Based on a wide range of independent reading, the student is provided the opportunity to analyze and assess the contributions by major writers in the field of management theory.

BA 639. Marketing Research. Credit, 3 semester hours.

Prerequisite: BA 609.

An overview of marketing research as part of the marketing information system. A study in depth of managerial considerations as they relate to locations within the corporate structure, staffing of the research activity, initiation and approval of market research projects, budgetary controls, and measurement of effectiveness.

BA 641. Mathematical Models and Methods in Marketing. Credit, 3 semester hours.

Prerequisites: BA 609 and BA 639.

The treatment of the basic decision problems of marketing management in terms of a conceptual framework for analysis. Consideration of the role played by human judgments and the mathematical tools available to aid in these judgments in a number of marketing areas. notably market analysis, pricing decisions, advertising decisions, promotional decisions, and selection of distribution channels.

BA 645 Current Problems in Corporate Finance Credit, 3 semester hours.

Prerequisite: BA 615.

Designed to enable students to apply the principles acquired in the basic course in corporate finance to the solution of advanced problems faced by corporate management. Topics include optimal depreciation policies and investment credits, depletion, capital gains and dividend taxation, and merger valuation problems.

BA 649. Investments. Credit, 3 semester hours.

Designed to acquaint the student with security markets, the various types of investment securities, and the recognized tests of safety, income. and marketability. Study of the techniques for critical analysis and interpretation of corporate reports from the investment viewpoint.

BA 657. Forecasting. Credit, 3 semester hours.

Prerequisites: EC 601-602.

Critical analysis of cyclical and growth theories and models is made in an attempt to establish a valid framework for economic forecasting. Identification, analysis, and appraisal of forces influencing the course of economic activity is stressed. Students are provided an opportunity to utilize a variety of forecasting and projecting techniques.

BA 669. Insurance: Principles and Practices. Credit, 3 semester hours.

Comprehensive introduction to the general insurance field. Covers types of insurance and general underlying principles. Considers the management of insurable risk in industrial and commercial firms.

BA 673. Business Law: Contracts and Sales. Credit, 3 semester hours.

Survey of the ordinary legal aspects of contracts and the results of contractual obligations. The law governing the marketing of goods as it relates to personal property. The law of bailments and common carriers.

BA 677. Business Law: Negotiable Instruments, Business Organizations, and Real Estate. Credit, 3 semester hours.

Survey of the law of negotiable instruments as reflected in the Uniform Negotiable Instruments Act and the Uniform Commercial Code, with emphasis on commercial paper commonly used in business transactions. The law concerning the formation and operation of partnerships, corporations, and other business organizations. Real property law respecting conveyances, mortgages, and landlord and tenant.

Economics

EC 601. Economic Analysis I. Credit, 3 semester hours.

An examination of the roles of consumption, investment, government finance, and money in influencing national income and output, employment, the price level, and rate of growth. Policies for economic stability and growth.

EC 602. Economic Analysis II. Credit, 3 semester hours.

Prerequisite: EC 601 or equivalent.

Topics in resource allocation and price determination. Theories of choice of consumers, firms, and resource owners under monopoly, monopsony, competition, and alternative market forms.

EC 603. Quantitative Methods I. Credit, 3 semester hours.

Prerequisite: Two semesters of college mathematics.

Basic mathematics and statistics for business problem solving. Includes set theory, matrix algebra, probability, models, descriptive statistical measures, regression and correlation, time series, index numbers, statistical inference, differential and integral calculus.

EC 604. Quantitative Methods II. Credit, 3 semester hours.

Prerequisite: EC 603 or equivalent.

More advanced mathematics for business problem solving. Includes mathematical model building, sequences, finite and infinite calculus, optimization models, simulation, mathematical programming, and multiple regression.

EC 625. Industrial Relations. Credit, 3 semester hours.

Collective bargaining strategies and policies of management and unions, union structure and tactics, labor legislation, wage theories, and problems of union security, unemployment, and government control.

EC 629. Public Policies Toward Business. Credit, 3 semester hours.

A survey of the economic aspects of government and business relations. Emphasizes the concept of public control over certain types of business and certain forms of business activity. Combination movements, pricing procedures, anti-trust laws and agencies enforcing them, regulation of transportation and public utilities, rate-making for transport, and pricing public utility services.

EC 653. Econometrics. Credit, 3 semester hours.

Prerequisites: EC 603-604.

Review of probability, statistics, and matrix algebra. Linear models, including two, three, and multi-variable regression models as well as input models. Nonlinear models, including nonlinear regression models and nonlinear functions fit to time series data. Computer simulation models, and problems of specification, estimation, prediction, and verification.

EC 687. Collective Bargaining. Credit, 3 semester hours.

Prerequisite: EC 625.

Emphasis on the negotiating process. The labor contract as it involves wages, worker security, management authority, and handling of grievances arising during the life of the contract.

EC 691. Labor Legislation. Credit, 3 semester hours.

Prerequisite: EC 625.

Considers the legal status of unions as set forth in state and federal legislation, and court decisions. Reviews recent NLRB rulings. Protective legislation dealing with wages, hours, child labor, and accident and unemployment compensation.

Industrial Engineering

IE 601. Industrial Engineering I. Credit, 3 semester hours.

Survey of the procurement, scheduling, routing, movement, inspection, and storage of materials in the production process, and their relationships to methods, tooling, operation times, and utilization of machines.

IE 602. Industrial Engineering II. Credit, 3 semester hours.

Prerequisites: IE 601 and IE 607.

Survey of the methodology used in factory planning, plant layout and materials handling design. Statistical quality control concepts of sampling and control chart techniques.

IE 604. Management Systems. Credit, 3 semester hours.

An analysis of management organization theory and principles as applied to the total operating system with stress on normative behavioral systems.

IE 607. Statistics and Probability for Management. Credit, 3 semester hours.

Prerequisite: M 203.

A comprehensive introduction to engineering and mathematcal, satistical, and probability theory as applied to operational problems. Includes descriptive statistics, inference, elementary probability, and normal, binomial, Poisson and hypergeometric distributions.

IE 611. Budgeting and Control. Credit, 3 semester hours.

Prerequisite: A 621.

An analytical approach as applied to the principles and policies of operational budgeting and control of expenses and capital investments. Includes forecasting techniques, development of totally integrated systems with traditional financial statements and controls from top management to first line supervision.

IE 612. Industrial Systems Economics. Credit, 3 semester hours.

Prerequisite: Instructor's consent.

The systems analysis approach and methods of industrial engineering applied to the examination of industrial production, the interaction between technical and managerial groups, and the determination of production methods according to productivity measures and alternate cost analysis.

IE 619. Enterprise Design and Evaluation. Credit, 3 semester hours.

Prerequisite: IE 601.

An analysis of the principles and methods used in estimating the probable economic characteristics of proposed enterprises. The student is required to formulate a proposed enterprise, including the technical, financial, and organizational requirements.

IE 621. Operations Research I. Credit, 3 semester hours.

Prerequisites: EC 604 or IE 607.

Introduction to the philosophy and methodology of operations research. Emphasis on the analysis of linear programming theory and application. Includes assignment, transportation, and simplex methods.

IE 622. Operations Research II. Credit, 3 semester hours.

Prerequisites: EC 604 or IE 607.

Analysis of the mathematical models of finite and infinite queuing theory as they apply to industrial problems such as inventory policy and machine interference.

IE 623. Operations Research III. Credit, 3 semester hours.

Prerequisite: EC 604 or IE 607.

Analysis and development of probabilistic techniques as applied to decision theory, game theory, and stochastic processes and their applications.

IE 641. Quality Control Economics. Credit, 3 semester hours.

Prerequisites: IE 602 and IE 607 or EC 604.

An economic and managerial analysis of statistical quality control sampling and control chart systems with application to accepted and hybrid systems.

IE 631. Production Engineering. Credit, 3 semester hours.

Prerequisites: IE 601-602.

The analysis and practical application of engineering activity that results in the transformation of natural resources into a finished product.

IE 643. Reliability and Maintainability. Credit, 3 semester hours.

Prerequisites: IE 602 and IE 607 or EC 604.

The basic theory and methodology of reliability and maintainability, including application of discrete and continuous distribution models and statistical designs. Reliability, estimation, structure models, and growth models.

IE 651-652. Human Engineering I and II. Credit, 6 semester hours.

A broad coverage of the problems of integrating the physiological, psychological, and sociological aspects of matching men with machines and the industrial-commercial environment.

IE 655. Value Engineering. Credit, 3 semester hours.

Prerequisite: IE 602.

Consideration of value analysis from the point of view of design, manufacturability, procurement, installation, and maintainability in order to optimize value in products.

IE 663. Tooling Techniques I. Credit, 3 semester hours.

Prerequisite: M 203.

An engineering study of such nontraditional tooling as E.D.M., E.C.M. and E.B.M., including economic comparisons of their applications and limitations.

IE 664. Tooling Techniques II. Credit, 3 semester hours.

An engineering study of such nontraditional tooling as high velocity forming of metal, including economic comparisons and their applications and limitations.

IE 683. Systems Analysis. Credit, 3 semester hours.

Prerequisite: Programming ability.

Concepts and techniques of computer oriented systems analysis. A survey of the problems and techniques for systematic control and evaluation of production and business enterprises. Case studies are used.

IE 681. Industrial Dynamics. Credit, 3 semester hours.

Prerequisites: A 621 and IE 604; or P 619.

A study of the behavior of firms and industries by computer simulation of their organizational structure and decision criteria.

IE 690. Seminar/Project. Credit, 3 semester hours.

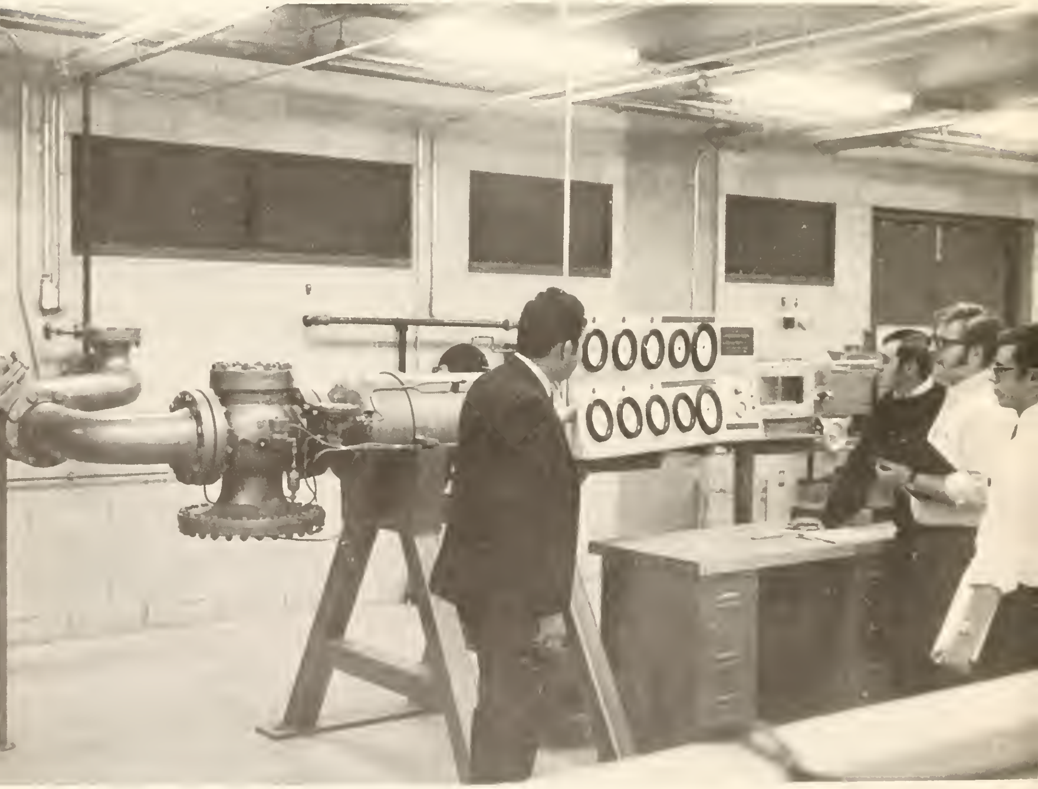
Prerequisite: Instructor's consent.

Requires the preparation of a graduate level paper in which the student reports his investigation and findings relative to an industrial engineering field program. Critique of the individual student's progress in carrying out the project.

Psychology

P 619. Behavioral Sciences and Administration. Credit, 3 semester hours.

An analysis of various theories of business and managerial behavior emphasizing the business organization and its internal processes. Economic analysis, hierarchical, management, modern organization theory, human relations, and conflict are examined.



ULTRASONIC WIND TUNNEL

Faculty — 1969 - 1970

Ahlskog, Gary R., B. S., *Adjunct Instructor, English and Humanities*
Yale Divinity School

Alderman, Fred, B.A., M.S., *Adjunct Assistant Professor, Business Administration*
East Haven High School

Alexander, Ronald, B.A., M.A., *Adjunct Assistant Professor, Industrial Engineering*
Career Planning Inc., New Haven

Alling, Roger D., B.S., *Adjunct Assistant Professor, Business Administration*
C.P.A. (Conn.)

Andersen, Carl W., A.B., M.A., *Assistant Professor, Sociology*

Anderson, George, B.E.M.E., M.E., *Adjunct Instructor, Mechanical Engineering*
Profession Engineer (Conn.)
Olin Corp.

Angyal, Andrew J., B.A., *Adjunct Instructor, English and Humanities*
Doctoral Program, Yale University Divinity School

Arnold, Joseph J., B.S., M.S., *Associate Professor, Industrial Engineering*

Arnold, Nancy, B.S., M.A., *Adjunct Instructor, Reading*

Atchity, Kathleen, B.S., *Adjunct Instructor, English and Humanities*

Babiec, John S., Jr., B.S., M.S., Ph.D., *Assistant Professor, Chemistry*

Baer, Madeline, B.A., M.A., *Adjunct Instructor, Biological and Physical Science*

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Balestrino, Guilio, B.S.M.E., *Adjunct Instructor, Mechanical Engineering*
Project Engineer, Lycoming Division, AVCO Corp.

Ball, Robert B., B.A., M.A., *Assistant Professor, Economics*

Barbuto, Joan, B.A., M.A.T., *Adjunct Associate Professor, English and Humanities*

Barrila, Francis, B.S., E.E., *Adjunct Instructor, Electrical Engineering*

Beebe, L. Peter, A.B., *Adjunct Instructor, English and Humanities*
Yale Divinity School

Beeken, Ramona, B.S., M.A., *Assistant Professor, English and Humanities*

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American Cyanamid Company, Wallingford

Blake, John, B.S., M.B.A., *Adjunct Assistant Professor, Business Administration*

Boak, Irwin S., B.S., M.A., *Associate Professor, Physics*

Bonk, Stanley, B.S.E.E., M.S.E.E., *Assistant Professor, Electrical Engineering*

Boucher, Rodney, B.S.E.E., M.E., *Adjunct Assistant Professor, Electrical Engineering*
United Illuminating Company

Briechle, Robert L., B.S.E.E., M.S., *Adjunct Assistant Professor, Industrial Engineering*
Sikorsky Aircraft Division, United Aircraft Corp.

Brown, David, B.S., M.A., *Professor, Psychology*
Certified Psychologist (Conn.)

Buckley, Cristina G., B.A., M.A., *Adjunct Assistant Professor, History*
Albertus Magnus College

Budrow, Russell B., B.E.E., *Adjunct Assistant Professor, Physics*
The Kerite Company, Seymour

Burlison, George S., B.A., M.S., *Adjunct Instructor, Psychology*

Burns, Donald, B.S., M.A., *Assistant Professor, Physical Education*

Burow, Dietrich, B.A., M.A., *Adjunct Assistant Professor, English and Humanities*

Burt, Daniel, B.A., M.A., *Adjunct Assistant Professor, Law Enforcement*
Student, Yale Law School

Burt, William J., B.S., M.B.A., *Adjunct Assistant Professor, Business Administration*
Manager of Marketing Services, Eastern Industries

Butler, Helga, M.S., *Adjunct Assistant Professor, English and Humanities*
Searching Assistant, Yale Sterling Memorial Library

Cannavaciolo, Alphonse D., B.S., M.A., *Assistant Professor, Mathematics*

Capone, Denise, B.A., M.A., *Adjunct Instructor, English and Humanities*

Carriuolo, Ralf E., B.A., M.M., *Assistant Professor, English and Humanities*

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Professional Engineer (Conn.)
Goodkind & O'Dea, Consulting Engineers

Caruso, Mario A., B.S., *Adjunct Assistant Professor, Business Administration*
C.P.A. (Conn.)

Casey, Evelyn, A.B., M.A., *Assistant Professor, English and Humanities*

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Notre Dame High School

Celotto, William F., B.S.E., M.S., *Adjunct Assistant Professor, Mechanical Engineering*
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Sikorsky Aircraft Division, United Aircraft Corp.

Chandra, Satish, B.A., M.A., LL.B., LL.M., J.S.D., *Assistant Professor, Business Administration*

Chardiet, Armando, B.A., LL.D., *Adjunct Professor, History*
Professor, Southern Connecticut State College

Chastain, Randall, A.B., *Adjunct Instructor, Law Enforcement*
Yale Law School

Chepaitis, Ella, A.B., M.A., *Adjunct Instructor, History*

Chepaitis, Joseph, A.B., M.A., Ph.D., *Assistant Professor, History*

Chun, Kee W., A.B., A.M., Ph.D., *Professor, Physics*

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